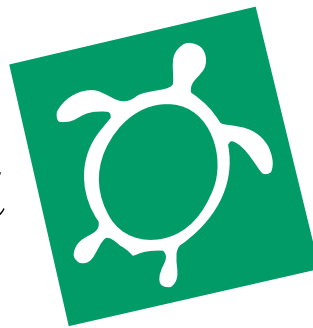


Environment



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A Whale Of a Problem

Marine mammals, like so many other denizens of the deep, are in trouble. Those that inhabit waters around the Hawaiian islands are no exception, as seen in Teresa Dawson's report on the recent meeting in Honolulu of the federal Marine Mammal Commission.

And lest one think Hawai'i's terrestrial animals are faring any better than the marine mammals, Patricia Tummons' interview with three of the foremost bird researchers in Hawai'i tells a different story.

While the news is grim from both sea and land, experts in their respective fields are hopeful that the situation is not so dire as to admit of no improvement. It will only take time, money, and years of work from tireless and dedicated people.

Experts, Managers Gather in Honolulu To Discuss Protection of Marine Mammals

When it comes to marine mammals in the Pacific, there is no shortage of crises. Tour operations are rousing spinner dolphins from their rest, fishing gear is hooking and entangling whales, and young monk seals in the Northwestern Hawaiian Islands just aren't making it to adulthood. But as speaker after speaker at last month's three-day Marine Mammal Commission meeting in Waikiki showed, resource managers, scientists, and NGOs are chipping away at the mountain of work that needs to be done to protect some of the Pacific's most charismatic marine life.

Commission chair John Reynolds concluded the meeting by saying that he felt confident that the marine mammal research and management community knows what needs to be done and that there is momentum toward attaining the interagency cooperation needed to improve the status of marine mammals in Hawaiian waters. Reynolds



PHOTO: PAULO MAURIN

Hawaiian monk seals at Kure Atoll in the Northwestern Hawaiian Islands.

also suggested that it was likely the commission could provide funds for the creation of a white paper on monk seal recovery as well as a workshop for the various agencies and groups with a stake in the seals' survival.

With regard to the other marine mammals in the Pacific region, the commission mainly
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Prospects and Potential for Saving Hawaiian Forest Birds: An Interview

Last month, *Environment Hawai'i* sat down with three of the editors of *Conservation Biology of Hawaiian Forest Birds: Implications for Island Avifauna*, to discuss issues raised in the book (published in November by Yale University Press). Here are excerpts from that interview, conducted by Patricia Tummons, with Thane Pratt, Paul Banko, and Carter Atkinson.

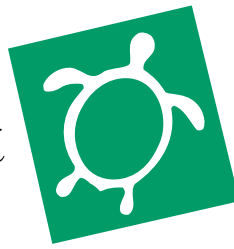
EH: You state in the book: "Conserving bird populations across broad areas is not only pivotal to their own survival, but also bears on other aspects of conservation, for birds are central to many aspects of ecosystem func-

tion." I think, however, many people see birds as almost an aesthetic amenity – bird songs, pretty birds flitting around. And that view might lead one to regard birds as non-essential, so that when it comes to a discussion of budgets, where to put our priorities, birds get short shrift – especially when you may have only a few dozen birds in the wild. How important can Hawaiian forest birds really be?

Paul Banko: Let me start with an example of the role of birds in ecosystems. I think the 'alala is one of the better ones, because as a disperser of large seeds, that's all we have now.

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Environment Hawai'i



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NEW AND NOTEWORTHY

Final Bigeye Rule: The National Marine Fisheries Service has issued a final rule to implement a quota on bigeye tuna caught in the western Pacific by the Hawai'i longline fleet. The rule, published in the December 7, 2009, *Federal Register*, took effect December 12. By sheer coincidence, that was also the day on which the service expected to give longliners the required seven-day notice in advance of the quota (3,763 metric tons) being reached and the fishery closed for the year.

As reported in the December issue of *Environment Hawai'i*, the quota is needed to put into effect conservation measures for the bigeye adopted by the Western and Central Pacific Fisheries Commission.

The rule does not sanction the charter agreement between the Hawai'i Longline Association and American Samoa, which was entered



Bigeye Tuna (*Thunnus obesus*)

into in an apparent effort to nullify the effects of any quota. Instead, it states that the legitimacy of such charter arrangements will be dealt with as NMFS reviews the amendment to the pelagic Fishery Management Plan proposed by the Western Pacific Fishery Management Council that would allow chartering arrangements with the U.S.-flagged territories in the Pacific.

Longliners with a Hawai'i permit that catch bigeye outside the U.S. Exclusive Economic Zone around Hawai'i can get around the quota by landing the bigeye in American Samoa, Guam, or the Commonwealth of the Northern Mariana Islands. Also, any longliner that holds both a Hawai'i longline permit and an American Samoa longline permit can continue to land bigeye in Honolulu after the quota is reached, provided that the bigeye are caught outside the Hawai'i EEZ. According to NMFS' Honolulu office, there are 11 longliners that hold both American Samoa permits and Hawai'i permits.

Swordfish Rule Challenged: Just days after the National Marine Fisheries Service issued another rule – this one concerning the longline fishery targeting swordfish – a coalition of conservation groups sued the agency in federal district court in Honolulu. The lawsuit, brought by the Turtle Island Restoration Network, Center for Biological Diversity, and KAHEA: The Hawaiian-Environmental Alliance, argues that the new rule, which removes prior limits on the number of sets the fishery could make each year, puts loggerhead turtles in increasing danger of extinction.

The new rule allows the swordfish fishery to catch up to 46 loggerhead turtles annually, up from the previous limit of 17.

Paul Achitoff, attorney with Earthjustice, which is representing the plaintiffs, stated, "The agency is once again pandering to Wespac's insatiable appetite for short-term profits, disregarding the law in favor of maximizing swordfish catch." NMFS rule change followed the advice of the Wespac, which had long objected to limits on the swordfish fleet's efforts.

The prior limit on the catch of leatherback turtles – 16 per year – still stands. Should the swordfish fishery reach either limit, the fishery would be closed for the remainder of the year.

New Plans for Forest Reserve: For the first time in more than 30 years, the state has adopted new management plans for its forest reserves. On November 19, the Board of Land and Natural Resources approved management plans for the Na Pali-Kona (23,013 acres) and Pu'u Ka Pele (23,600 acres) forest reserves on Kaua'i and the Moloka'i Forest Reserve (11,690 acres).

According to a report to the board by the Department of Land and Natural Resources' Division of Forestry and Wildlife, the state intermittently developed management plans for its forest reserves from the early 1900s to the 1970s, when it ceased adopting new plans "for undocumented reasons." But in 2008, DOFAW reinitiated its efforts to develop and update plans for all of the state's 52 forest reserves to organize management and improve funding prospects, among other things.

Environment Hawai'i

72 Kapi'olani Street
Hilo, Hawai'i 96720

Patricia Tummons, *Editor*
Teresa Dawson, *Staff Writer*
Susie Yong, *Office Administrator*

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Patricia Tummons
*President and
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Teresa Dawson
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Quote of the Month

"People might say, well, no more Hawaiian birds, and that's too bad, but I've got a meeting to do. We're such an adaptable species we can accommodate to an almost frightening range of consequences, which makes it hard for us to put on the brakes."

— **Paul Banko**

BOOK REVIEW

A Celebration of Hawaiian Forest Birds

Thane Pratt, Carter Atkinson, Paul Banko, James Jacobi, and Bethany Woodworth, eds. *Conservation Biology of Hawaiian Forest Birds: Implications for Island Avifauna*. Yale University Press, 2009. 728 pages. \$85.00 (hard-cover)

If Hawai'i lost its remaining native forest birds, plenty of birds would still fill the skies above the islands. Mountain slopes would continue to be forested. It is hard to imagine that the loss would be felt at all in the daily lives of the islands' million or so residents, many – if not most – of whom have never seen a native forest bird in their lifetimes.

But, oh, what a loss that would be. Thanks to the phenomenal efforts of the five editors of *Conservation Biology of Hawaiian Forest Birds* and to the dozens of contributing authors, we can understand so much better than ever before just how much the extinction of Hawai'i's unique avian biota would mean, not only – or even especially – for people living here, but for global biodiversity as a whole. Already, most of what was here before the arrival of humans has been lost forever. But what remains is still pretty amazing and if you don't believe it is worth pulling out all the stops to save it, then you need to read this book.

The very fact that the Hawaiian islands became such a rich, deep well of bird life is the result of a series of wholly improbable circumstances. For a colonizing bird, or pair, to arrive on the archipelago from a land source thousands of miles away would be a remarkable event if it occurred even once; the fact that this occurred many times over the last six million years is astounding.

From the two dozen or so lineages of land birds that arrived on these islands and reproduced arose more than 110 species – and, as Thane Pratt notes in his introduction discussing the origins and evolution of Hawai'i forest birds, “nearly half arose from a single colonization and radiation: the Hawaiian honeycreepers descended from a cardueline finch” (p. 12).

After the first humans arrived a thousand years ago, the first wave of extinctions began. More than 70 species disappeared before 1778, when Captain Cook arrived in Hawai'i. “Since then,” write Winston C. Banko and Paul Banko, “24 more have disappeared.” And what are left are in trouble: “Among the Hawaiian passerines (songbirds or perching birds), 24 (69 percent) of the 35 remaining species or subspecies are federally listed as Endangered

Species, although 10 of these may already be extinct” (p. 26). Recently, two more species – the ‘akeke’e and ‘akikiki (Kaua'i creeper), both on Kaua'i – have been proposed for listing as endangered.

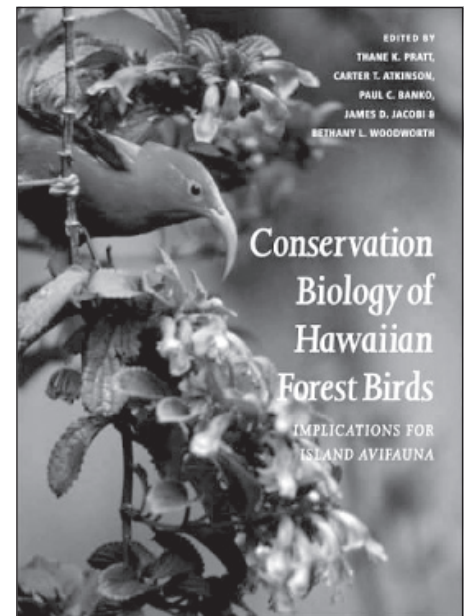
The book's 24 chapters are grouped into five sections: origins, decline, and culture; status, biology, and limiting factors; applying research to management; recovery programs, and the future. Each section consists of chapters by experts in their respective fields, and while much of the material offered recaps work published elsewhere, it is extremely useful to have it all collected in one sturdy binding.

At the heart of the book – literally – are full-color plates depicting not only the extant species of forest birds (most of them portrayed in the gorgeous photographs of Jack Jeffrey), but also photos of three recently disappeared species (the Kaua'i 'o'o, the 'o'u, and the po'ouli), and colored renderings of species that have gone extinct since western contact. Several more plates show typical Hawaiian forest bird habitats, in both pristine and degraded conditions. One plate consists of the famous painting by Douglas Pratt of 26 species of Hawaiian honeycreepers evolving from one common ancestor. Additional plates show the capes Hawaiians made from forest bird feathers, and a dozen or so maps depicting land and conservation areas, among other things.

In light of past losses and seemingly overwhelming threats to many of the remaining bird species, the editors remain hopeful that extant species can be recovered – and, perhaps more important, that it is imperative to make the effort to do so. “It is neither lack of information nor lack of planning that stands in the way of saving Hawai'i's endangered avifauna,” writes J. Michael Scott in the foreword. “It is lack of action.”

“[R]esearchers and managers must join together to frame conservation management objectives,” he continues. “These things can be done; *they have to be done.*”

In his preface, Thane Pratt acknowledges the daunting tasks, but remains upbeat: “Hawaiian forest birds are at a crucial turning point. The sad, uninterrupted history of bird declines continues. Yet for the first time, local declines have been halted and in some cases reversed thanks to field management and research. Can we act in time to save the remaining Hawaiian forest birds? It is the editors' fervent hope that the information contained in this book will inspire an accelerated effort to



pull these birds back from the brink of extinction.”

What needs to be done? First, and perhaps foremost, there's funding: as Dave Leonard points out in his chapter, endangered Hawaiian forest birds do not receive anything approaching a proportionate level of federal funding for recovery actions, compared to mainland endangered species. “On a per species basis, Hawaiian forest birds fare very poorly nationwide,” he writes, with annual average expenditures of around \$112,000 per species, a figure that “is problematic compared with what is really needed to prevent the extinction of more Hawaiian forest birds,” which Leonard says is around \$4.6 million per year per species, or a total of \$39 million per year.

Funding at that level would go far toward carrying out many of the conservation measures that are identified by the editors, including aggressive removal of predators and ungulates, increased monitoring, expansion of habitat, and control of invasive species, among other things. Beefed-up quarantine protocols, higher public profiles for native birds, revised hunting guidelines, greater research into forest bird ecology – all those also have important roles to play.

For those who are already in the choir of believers in the cause of saving Hawai'i's unique and invaluable avifauna, this volume can be regarded as the definitive bible. For those who are outside the congregation, if this does not convert them, it is hard to imagine what could. In any event, no library in the state should be without this book on its shelves.

It would also, we note, make terrific bedside reading for members of Hawai'i's congressional delegation – and for the occupant of the fifth floor of 415 South Beretania Street, Honolulu.

—P.T.

Interview from page 1

Of course, earlier there were even larger corvids dispersing large seeds, and now we don't even have 'alala in the wild anymore. So who's dispersing the large seeds? Well, basically nobody, so that's a huge ecosystem consequence, when seed dispersers drop out of the picture, become rare and endangered. 'Oma'ono and other birds are also dispersing seeds, but, again, as an example, that large seed dispersing role is vacant and probably will go vacant for some time to come.

So that, in my mind is one of the pivotal roles birds play in the ecosystem, getting seeds out there and affecting very dramatically forest structure and composition.

Thane Pratt: Native birds are very much tied in to the pollination of plants. In the book, we make the point that prior to the arrival of people, there were no mammals or reptiles. Birds were the main vertebrate group here, and they were really abundant. When you go to the higher elevations in Hawai'i, you still find native birds abundant.

And because they were so abundant, they became tightly linked to various ecosystem functions and to the evolution of plants and animals in those ecosystems. For instance, if you go to high elevation forests on Maui, you find almost all of the woody plants are pollinated by birds, and this is remarkable, because some of the flowers are very tiny and they don't look like the kinds of flowers that are typically pollinated by birds—they aren't large and bright red, and they don't necessarily have a lot of nectar to offer. Nevertheless, the birds use them.

Some studies by evolutionary biologists have been able to demonstrate that in fact

*'Akiapola'au*

ALL BIRD PHOTOS: © JACK JEFFREY.

there's been an adaptive shift on the part of certain plants away from insect pollination and towards bird pollination. The same thing has happened with seed dispersal. There are some plants in Hawai'i that arrived here with woody capsules that eventually evolved fleshy fruits. This is theoretically a hard thing to do, but they've done it, and the reason why is because the old-time ecosystems were packed full of birds. The birds were able to help the plants out with their reproduction.

These are some of the things to regard when we think of Hawaiian birds, besides the fact that they're beautiful and we rejoice in their songs, they play a role in the ecosystems. We have today many species of plants that are endangered and some of them are not either being pollinated or having seeds dispersed as they did in former times, and the reason for this is that bird numbers are a lot less than what they used to be.

EH: So it's having an effect on the composition of the forest?

Pratt: I don't know if people have studied that so much. People are just now starting to look into these kinds of interactions. We're starting to see now some of the first studies

coming out looking at the reproductive ecology of plants, why certain plant populations are limited. We're now starting to find where the weak links are in the system. Why are certain trees not reproducing? For instance, loulou palms have large fruits and large seeds. Presumably something ate them in the old days. Nothing eats them now and spreads them around. It might have been 'alala. We've only been able to study 'alala where they were found recently. They used to be in other ecosystems, down along the coast, where they interacted with other plants.

Banko: Pollination and seed dispersal tremendously affect the life history of individual plant species and community composition, vegetation community structure. But the birds also, especially the honeycreepers, evolved dramatic bill shapes. Many of these were for extracting insects from different kinds of substrates, different situations. So they clearly would have also been an important driver of insect and spider evolution, too. There's the whole business of crypsis—be drab, be under bark, be hidden away, otherwise you get picked up by a bird.

This is actually something that's hard to study, hard to really make a strong, direct link, but clearly, just the extraordinary range of bill sizes, many of which were designed to get obscure hiding insects out of holes and leaf axils and so forth, indicates to me that there was a really powerful kind of pressure that birds were exerting as consumers—they're just the ultimate consumer of high caloric demands. They're going for fruits and seeds and nectar and insects—and insects particularly during the rearing of young.

Caterpillars spring to mind as the single most important bird food, not the only one, by any means, but that's the currency you need to bring up offspring, generally speaking. There are other things, too, but caterpillars are a food source that's hard to beat.

For almost all the bird species that R.C.L. Perkins knew, he says, well, caterpillars, spiders, these are really critical foods for young birds. So you can imagine during breeding seasons the tremendous pressure parent birds are under to feed these gaping mouths caterpillars and spiders and everything else. This certainly had some sort of impact on the arthropod communities. What exactly we're not sure, but we know there were no insects just lying out in broad daylight. Not for long.

EH: You say in the book that conservation restoration needs to occur over large areas to be meaningful. Also, conservation and game management areas need to be physically separated. What is the likelihood of this occurring in Hawai'i?



Left to right, Paul Banko, Carter Atkinson, and Thane Pratt

Pratt: I think we are starting increasingly to see this happen. In the creation of the national parks and the private reserves, the Nature Conservancy reserves, there are areas being set aside where animals are being removed. The state, of course, has its Natural Area Reserve System, and animals are removed from some of those reserves. But on the whole, the game animals remain primarily on state and certain private lands.

Carter Atkinson: There's been a lot of progress made in the 15-20 years I've been here.

Pratt: We try to show some of this in the chapter on protecting forest bird populations across landscapes. But the percentage of lands that are truly protected, on-the-ground protected, where the fences have gone up and the animals removed, is proportionately very small.

Banko: It's a hard subject to penetrate. But I would imagine, if we could look 200 years



Puaiohi

forward, and say how many people will really be strongly interested in hunting pigs, versus how many people really want to go and see the last 'apapane population, or whatever's left, I would think more people would rather go see the birds than go hunting. I don't have anything to back this up, like a survey that shows declining hunting interest. However, my impression, in the time I've been here, since high school days, is that there's just less interest in hunting generally.

Pratt: There's been a trend, of course, toward the protection of areas that are most intact in terms of their native biota. And those areas that have the most endangered birds. Those are the areas that get worked on first. The areas that have the least amount of native biota aren't as high priority for conservation. It's those latter areas that you could foresee in the future would ultimately hold the game mammal populations. Those areas are typically at lower elevation, and are overrun with weeds—strawberry guava and worse. At what

point can those lands truly be restored? It'd be just an enormous amount of work. Why bother to tackle those areas when in fact there are these better areas, that are much higher priority and hold so much more, that have fewer weeds, and where ungulate populations are manageable. Those are the areas that get prioritized.

So you see this form of different land use slowly evolving.

EH: On the subject of weeds, certainly you are all aware of how controversial the proposed introduction of the biocontrol agent for strawberry guava has been. Yet it seems like, for landscape-scale restoration, biocontrol of waiwi and maybe albizia and maybe miconia—and who knows what is yet to arrive—is really essential. It can't be done without biocontrol. What can be done to tie the conservation of Hawaiian forest birds to the need for biocontrol as part of restoration or conservation of habitat?

Banko: I think it is critical to do this. You mention plant pests, but most of the biocontrol in Hawai'i was directed to insect pests, which is a very different kind of category to defend against, and to find effective agents to work against. Historically, Hawai'i, California, and Australia were the proving grounds for biocontrol worldwide. That effort extends back more than 100 years. Many of the agents were highly effective in terms of what their goals were, but Perkins himself, early on in the game, was concerned that many of the parasitoid wasps that were being introduced for caterpillar control in sugar cane fields had escaped into the native forests. He pondered what the consequence of that would be.

That was then, and this is now. The science of biocontrol is so much more advanced, and there are so many, many mistakes that people have the advantage of learning from—oh, don't bring in generalists to kill your pests, because they'll very likely go to non-target hosts, and so forth. So in my mind, it's a whole different game now.

There are reasons to be cautious, of course, but I think all the appropriate measures are in place to test things against non-target hosts. That's not to say it's fool-proof, but the benefits of biocontrol far outweigh the risks. But it really is a very expensive enterprise, and so a lot of agencies simply are not geared up to dive into it.

EH: But the expenses are up front. It's not like, say, ongoing maintenance of a fence.

Pratt: That's right. These are the hardest things for conservation to fund. If you're

concerned about saving Hawaiian forest birds, you have to protect their habitat on a large scale from weeds and invasion from new weeds or other kinds of animals that would prey on birds, or diseases.

But it's the prevention aspect and the biocontrol aspect that are the hardest to get funding for if you're focused on just one group of animals or one group of plants. People think of bird conservation in terms of, say, planting a pasture with trees so the birds will have more habitat and they'll move in. They think of bird conservation as protecting nests from predators. They think of bird conservation in the sense of, say, moving 'akis to some new restored habitat—sort of hands-on, direct management of a bird population.

We don't, however, tend to really make the big leap between protecting birds from threats that either could be or in fact are out there that are hard to control. And, certainly, plants like strawberry guava and miconia could completely transform the forest habitat of these birds and eliminate them all by themselves. They are really very major threats.

You have to approach those threats from the standpoint of protecting the entire biota and the entire ecosystem.

When we first conceived of the book, there were a few topics that at first we left out, and then we realized, no, we have to put them in. So there's a chapter in the book by Lloyd Loope and Fred Kraus on how to prevent the establishment of more alien species. This is really in a sense the hardest thing to do—to stop people from bringing stuff in. But it's one of the most important things, and certainly one of the most cost-effective. By the time miconia gets out there, and you want to clear the Big Island of miconia, or waiwi, that's fabulously expensive. To stop the thing from coming in in the first place is less expensive.

But some of these early-stage preventative measures are the hardest to implement, because at the root, it's causing people to have to change their behavior, their habits.

EH: You talk about the disparity in funding for mainland versus Hawaiian endangered birds. How can this be addressed? Is there lobbying by bird groups, or conservation groups, or some way to get Hawai'i's congressional delegation to appreciate more the need for bird conservation?

Banko: Last year, the State of the Birds report came out, and that's potentially a turning point. There have been several such reports over the last, say, 30 years, and this is the most recent one. When mainland interests in Hawaiian birds bring the issue to national atten-



O'ahu 'Elepaio

tion, as they can, we do get an increase in funding, at least a little bit. But it's still just way, way, way below what's needed. We're still dealing with symbolic amounts of funding for rescuing anything.

A case in point is the palila. We kind of cracked the list of the top 25 endangered birds for federal funding because palila has gotten funds through Saddle Road mitigation. Now that that's basically spent out, we're going to be dropping rapidly back down to wherever—maybe 47th or whatever. 'Alala will probably remain relatively high by Hawaiian bird standards for a while.

EH: That's because of captive propagation?

Banko: Yes. It's very expensive. It kind of depends on how you count the dollars, too, because, for example, take the Kona unit of the Hakalau refuge. That was established primarily to help 'alala, but there's lots of other things, too. It's kind of hard to make it all just tie in species by species. Nonetheless, as Dave Leonard points out in the chapter he wrote, Hawai'i is disadvantaged because we don't have neighboring states who share bird species with which we can combine forces. So both congressionally and in terms of how the agencies can operate, we're just out here on our own, trying to do it.

Pratt: There are some really very fundamental things that have contributed to Hawaiian birds not receiving the attention that they deserve. The American bird-watching public, in toto, really doesn't have Hawaiian birds up on their radar screen. For many years, Hawai'i has not been included in American field guides or on the American Birding Association checklist. Without people seeing these birds in their field guides, being exposed to them on a day-to-day basis in their literature, they haven't become familiar with them, and without becoming familiar with them,

they can't educate themselves about them and become concerned and care about them.

One of the things that has been so interesting to me is to talk to my age peers about Hawaiian birds. I'm in my late fifties, but I remember as an excited 12-year-old, getting my first bird book, Roger Tory Peterson's Field Guide to American Birds. I got my copy on my first visit to the mainland, and I was just thrilled. It had all the mainland birds in it, but at the very back, on two plates, it had all the Hawaiian birds. So everything was there. Absolutely everything. This was just wonderful. And I was able to learn my birds that way.

If you talk to Rob Fleischer or Doug Pratt, who grew up on the mainland, they had the same experience. They got their Roger Tory Peterson field guide. They learned their mainland birds, and in addition, they learned Hawaiian birds. And having the Hawaiian birds in there got them curious and then inspired them to work on Hawaiian birds.

This came home to me as a revelation when I went to the American Ornithological Union meetings two years ago. Rob Fleischer gave a plenary address on Hawaiian birds. He started out by holding up his now much frayed and battered copy of Roger Tory Peterson's field guide to the birds of western North America and said, "This is how I got interested in Hawaiian birds."

I think if we could get the Hawaiian birds back into American field guides, there would be more Rob Fleischers and Doug Pratts out here working on Hawaiian birds. And we do need help from the mainland. There's no question about it. This is where the vast majority of our funding comes from. We really need to have a much higher profile for Hawaiian birds.

EH: But Hawai'i does get lots of money for endangered sea turtles through the Department of Commerce, most of which comes by way of earmarks through Senator Inouye's office. Why is it that birds are so disadvantaged with respect to the attention of the Hawai'i congressional delegation?

Pratt: If an endangered species gets involved in an economic conflict, it gets attention. The fact that we have turtles on our beaches, and they interact with the public, and they've gotten tangled up in the fisheries has meant increased attention and funding. We only have two Hawaiian birds that have had that. One is the 'alala, the other is the palila. It was because of the Saddle Road that the palila got all the funding that it did and moved into the top 20 list. But for the most part, our birds are tucked away back in the forest, and they can

do pretty much as they please without having much impact on anybody.

EH: When it comes to conservation of habitat, climate change seems to be the 800-pound gorilla in the room, affecting nearly every aspect of management and conservation. To take one example, there's the expected climb up the mountain of warmer temperatures, making it all the more important to control the spread of mosquitoes and prevent the introduction of new species of mosquitoes that are more tolerant of the cold.

Atkinson: The bigger issue is cold-temperature-adapted parasites. You can have mosquitoes that are adapted to cold temperatures but the malaria parasite can't develop in them. Still, if the cold-temperature tolerant mosquitoes became established, they would be in place for other diseases to transmit that are more cold-tolerant, such as West Nile Virus and other things.

And, with warmer temperatures at higher elevation, you would, of course, have increasing range of the malarial parasite.

EH: You also discuss how limiting the spread of mosquitoes is so much related to maintaining an intact forest, where you don't have water collecting in the holes of tree ferns knocked down by pigs, or wallows dug out by them. So this would entail ungulate management, too.

Atkinson: Especially on this island Hawai'i. The relationship breaks down a little bit when you get to the older islands, where you have a lot of streams. We've found that stream margins can be sources of mosquitoes.

EH: Is there anything else to be done to address climate change, so far as habitat management goes?

Banko: There's actually quite a lot. But overall, climate change poses additional challenges for all the species. Yet, if we can be effective at reducing some of the existing threats, that's the best we can do. For example, we don't have any remedy, realistically, to say, okay, there's going to be no more disease because we've magically found a way to eliminate mosquitoes. The technology for reducing rat predation is improving, registration for rat toxicants to be applied aerially is advancing, slowly, but it's at a point where, certainly, in the next five or ten years, I would expect that to be a readily available and cost-effective management tool in Hawai'i, over large areas.

My thought is that, if a new threat emerges or an existing threat increases, and you can't

effectively do anything about it at least in the short term, the best thing to do is hit predation or improve habitat quality even more than you are already doing and bolster the population of birds that way. It's kind of a game of compensation. If factor X becomes prevalent, and you can't do anything about it, then clobber factor Y, because there are multiple factors in probably every case.

And it doesn't mean necessarily that if you hit factor Y, that will compensate entirely for the increase in factor X, but what else can you do if you have no tool in hand to deal with climate change?

So to me, improving habitat and reducing predation become even more important as we see climate changing or new diseases come in or they move up higher on the mountain. It is just all the more critical to manage the habitat without ungulates, without rats, cats, and so forth.

EH: Has any thought been given to expanding bird habitat elevationally?

Pratt: Sure. There has to be strategic planning for the protection of bird habitat, realizing that high elevations are where the birds are going to persist, and improving those habitats. If the climate does become drier, then there will be a shift away from, say, wet forest towards mesic forest, or where there's mesic forest, from mesic forest to dry forest. And birds can exist in those kinds of forests.

EH: For example, above palila habitat, on the southwestern slopes of Mauna Kea, there have been outplantings of mamane. Is more of that envisioned or thought about as a long-term possibility on the eastern side of Mauna Kea?

Banko: Hypothetically, yes. I think the limits to mamane in terms of elevation are untested. I suspect that if you planted mamane at 11,000 feet, it'd probably do fine. In the case of palila, you probably can expand the forest upward. But logistically, that may not be so feasible. We've roughly calculated that about a million mamane trees are what are sustaining the current population of palila on the southwestern slope. That's a lot of trees. To increase habitat upward would require presumably millions of trees, especially if you're talking about the whole mountain.

Nonetheless, that's something that shouldn't be just avoided as a long-term kind of approach, because I think the climate is affecting palila even now. It's more of a feeling than a direct observation, but it's been very dry and when it's dry, mamane just does not produce very many pods, and that's critical for palila.

So there are really only a few options. One is plant way more trees in the existing range. Two is plant higher up on the slopes and hope that it helps in the long run. Three is potentially to go look harder at what other kinds of food resources palila could exist on. They used to exist in coastal habitats, which it's hard to imagine were dominated by mamane. Maybe we're just not trying enough other, alternative foods. In their existing habitats, sandalwood is one that might be a useful alternative, if mamane is just not going to ever produce enough pods to keep the whole population going, but there are other things to try as well.

Pratt: Paul brought up a really good point. Climate change is not going to affect all species equally. Climate change is going to affect all islands, to be sure, but certain species are going to be impacted much more by it than others, and palila is a good example of that.

As it is now, most kinds of Hawaiian birds are found only on one island. There are only a few kinds of Hawaiian forest birds that are found on more than one island – apapane, i'iwi, amakihi. All the rest are found on only one island. Some islands, the low islands, are going to be more affected by climate change than the high islands, because there is less altitudinal room to move.

Right now, the island bird fauna that is most threatened is on Kaua'i, because the island is only 5,000 feet high and the birds are restricted to the small plateau up there. In my lifetime, we've lost four or five species of birds from Kaua'i over a very short time, just over a couple of decades. Conditions there are changing pretty quickly.

So, again, what is needed for climate change is a strategic approach – to say, well, we need to give extra special attention to these birds that are going to be the soonest affected by these changes. And Kaua'i certainly is the place to watch right now. Birds on O'ahu have largely become extinct except for a few species – the O'ahu 'elepaio certainly needs a lot of help. But Kaua'i still has eight species of forest birds. We're still seeing decreases in their numbers. The Kaua'i 'akepa and the Kaua'i creeper, the 'akikiki and 'akeke'e are declining.

Those birds really need help. Certainly habitat improvement could help. Predator control within their range – it's a relatively small range, so it's feasible. It's a matter of political will and financial resources to do it.

We may also have to think beyond Kaua'i as a habitat for these birds. Maybe we will have to take some of these birds and move them to other islands, like Maui. Maui at one

time had a species of thrush. Kaua'i had two species of thrush. We now have one, puaiohi, which is on its last legs, with somewhere between 300 and 500 birds. Some of those birds could be brought to Maui.

Maui had a species of 'akepa. It's extinct. Kaua'i still has its 'akepa. Here's another potential move that could be made.

The New Zealanders have made tremendous progress saving birds by moving them to new islands. We in Hawai'i have done this. The nene was introduced to Maui and to Kaua'i from the Big Island, and it has expanded in those places. More recently, the Laysan duck was brought to Midway, and the population there is pretty soon going to be bigger than the one on Laysan.

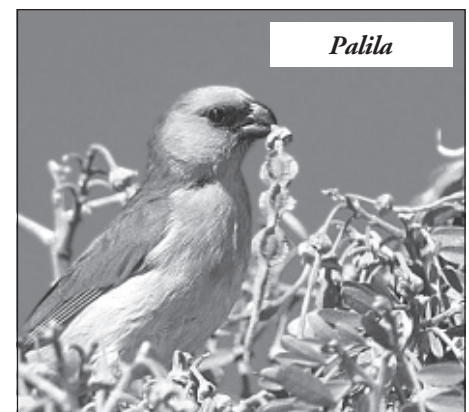
It's time for us to begin thinking about this for the forest birds. Here the best means of prevention is not to have all your eggs in one basket.

EH: Is there some plan for triage? If funding doesn't come through, and you have limited resources, are you just going to say, for instance, sorry Kaua'i, you're out of luck.

Pratt: I've never heard of that, and I don't see why there should be. There's no triage on the mainland. Even some of the least-funded birds on the mainland do better than what we have here. There should be no triage until a bird goes extinct.

I think there really is cause for optimism. There are things we can do for each one of these species. The approach has often been to lump birds together, either by island or by ecosystems, and if you do this, that is a form of triage, too. There are some specific things that can be done for each one of these species, and there should be strategic planning done for each one of these species, as is done on the mainland.

Certainly you can take a pessimistic perspective, and say well, we can make some predictions about what's going to happen to each one of these birds, and those predictions can be informative. For example, you could



say Kaua'i birds are in more trouble than those on the Big Island because they have less habitat, and make that a prediction. On the other hand, the ultimate outcome of those predictions is something not certain. Those outcomes are hard to predict. I think if R.C.L. Perkins a hundred years ago had been asked who he would put his money on – would he put his money on the kama'o, on Kaua'i, or the puaiohi. That's a no brainer, he'd have said, you'd put it on the kama'o any day. He said it was the most abundant bird in the Kaua'i forest. How could you possibly predict that it would go extinct and we'd be dealing now with the puaiohi.

So I'm hoping that we will have, in the long run, some surprises. I think we can be very knowledgeable and be very smart in our approaches to conservation, but we can't really look into a crystal ball. Taking that approach, I think we should give every species its best shot.

EH: You say a minimum of about \$40 million a year is needed to accomplish what's minimally needed to conserve all species of Hawaiian forest birds.

Pratt: That was one of the most difficult things we had to write about. In the endangered species recovery plan, all these cost estimates were put in, and many of them were just pulled out of thin air. A lot covered very big items – habitat protection on a large scale in areas that were quite weed-invaded, controlling predators over vast areas. That's all very, very expensive.

On the other hand, we can make progress with less. Obviously, since we've been doing that, and we are making progress.

David Leonard, who wrote the chapter on funding, is now working on a sequel to that, trying to figure out what will be the cost of saving Hawai'i forest birds. He's going to try to make all those calculations.

I think one of the dangers in looking at the cost of saving birds is, by the time you add it all up, you look at this figure and say, Oh my god, I can't afford this – just to save these birds? I'm not going to spend \$40 million a year just to save these birds. It's just not worth it.

But the thing is, a lot of the saving the Hawaiian forest birds is tied into saving everything else – it's tied into saving the best of the Hawaiian habitat that's out there, with all its component biota, of which Hawaiian forest birds are a part. One of the nice things about that fact is that some of the tab can be picked up by watershed partnerships. They're there to protect habitat. The national parks are there to protect everything in their realm.

So some of the costs are actually going to be borne by projects in which birds are just one component.

EH: There will be people who will say, why bother saving these unique birds? Why not, if they're required to propagate certain plants in the forest, let them all go extinct, and something else will come along to replace them.

Banko: Well, we're without the passenger pigeon, and the Carolina parakeet, and the great auk, and so forth. Around the world, we're without all these species, and we're rolling along just fine. Your individual quality of life is pretty much unaffected by that. So it's reasonable to think that people on the mainland and elsewhere in the world might say, well, no more Hawaiian birds, and that's too bad, but I've got a meeting to do. We're such an adaptable species we can accommodate to an almost frightening range of consequences, which makes it hard for us to put on the brakes.

So, I have no real answers for that. All the Hawaiian birds could go extinct, and no one in New York would feel the consequence of that one bit.

Even in Hawai'i, the majority wouldn't even know. You'd have to report it. How would they know? They're not exposed to very many of them to begin with, and they think very little about them as a general rule. It just does not come up in party conversation, outside of select groups. I see that as one of the big threats, as I alluded to earlier. A social dimension like this is one we're not really prepared to address. That's not what we do, and it's clearly not what we're good at, or we wouldn't be in such a pickle.

I think until that element of social awareness is brought in, we won't be as effective as we could be. We need somebody who's much more prepared and versed in outreach than we are – how to engage the public, or a much bigger chunk of the public than whatever small percent really does think about their environment closely.

Pratt: We need to think of ways of bringing Hawaiian birds into the lives of Hawai'i's people. You have to physically bring the two together. Providing a lot more access, more trails, birding opportunities, places where classes can be taken to see birds. The state has been trying to do this up on the Saddle Road, where they've built a loop trail. It's great, off a major artery people drive through all the time. But there has to be more of this. There have to be more interpretive opportunities.

But that only gets you so far. People have to be exposed to stuff enough, and get something positive out of it so they actually love it.

Once they love it, then they're going to defend it. We see that with the SOS program on Kaua'i – Save Our Shearwaters. People see the shearwaters beside the road, feel sorry for them, and so they bring them in. The public is keyed into that.

That's certainly one of the reasons the turtles get so much help. People like seeing the turtles.

The Nature Conservancy on Maui has a wonderful reserve, but there's only very limited access. There has to be larger access to these birds, for people to see them and have first-hand experience.

In my view, this could be done without impacting the birds' populations as a whole. You could have some small area of 10 acres or whatever, where there's a trail people could walk around, where classes could be brought, or any interested person could go.

We live in a society where, if one person develops a strong interest in caring for something, they can actually make a difference. Out of a population of a million people in Hawai'i, if we had just some small number of people interested in birds – two, or three, or four or 10 times that many people with a keen interest, they could make a large impact.

EH: We haven't talked much about captive propagation.

Pratt: What we need to learn a lot about now is how to introduce birds to habitat – whether that's translocation of wild birds or introduction of captive-reared. It's the introduction component that's really difficult and we have a lot to learn about.

There was a steep learning curve 10, 15 years ago about how do you bring birds into captivity and maintain them and breed them, and we're over that for a lot of species. Right now the hard part, and this has always been the hard part, is how do you establish new populations of an animal?

Banko: And in some cases, how do you get them to breed? It's mixed. The puaiohi readily breeds in captivity. But all the rest – palila, there are essentially two females who breed in captivity. We can't get the other ones to breed. What does it take? The 'alala is doing a little better.

The big take-home message for me with captive propagation is: You'd better not be relying on that, better not be waiting until it comes to that, because your chances are very slim that it will work – that you're going to get a puaiohi out of it. Instead you're probably going to get a palila or 'alala or something that just does not do that well in captivity, and it will take a ton of money to get them over the hump.

— **Patricia Tummons**

Marine Mammal Commission from page 1

offered advice on how agencies can best make use of limited resources. The following is a sample of some of the research presented and discussion that took place.



A Shifting Paradigm

The remote, largely uninhabited North-western Hawaiian Islands (NWHI) have long been where most Hawaiian monk seals (*Monachus schauinslandi*) lived, but in recent years, an increasing number of seals have been spotted and are being born in the Main Hawaiian Islands (MHI), which is also home to nearly 1.3 million people. What's more, the seals in the MHI seem to be healthier and more apt to survive to adulthood. In 2009, researchers identified 113 monk seals in the MHI (up from 88 in 2008) and there were 21 known births (up from 12 and 13 in 2006 and 2007, respectively).

Lloyd Lowry, a member of the endangered Hawaiian monk seal recovery team, told the commission that the MHI subpopulation may equal some of the larger populations in the northwest, and may, in fact, exceed them if all of the seals here are taken into account, including those at Ni'ihau, which researchers have not yet properly surveyed.

"We're in the middle of a paradigm change in how we deal with recovery of the species," Lowry said, noting that for the past several years, all seal recovery activities were directed towards the NWHI.

"There were some seals in the MHI, the ones Bill Gilmartin [a former NOAA monk seal expert] and others brought here...and females moving in, pups being born. But we basically viewed those as problems," he said of the old days.

Population data collected over the years by the National Marine Fisheries Services' Pacific Islands Fisheries Science Center, however, indicate that if the Northwestern and Main Hawaiian Island populations of endangered Hawaiian monk seals follow their current trends, in 20 years there will be fewer than 600 seals left in the wild, most will live in the MHI, and fewer than 200 will live in the NWHI.

According to PIFSC monk seal researcher Charles Littnan, the NWHI population is in a strong decline that is likely to continue with so many young among the dying, even if environmental conditions improve. Key to preventing a collapse, Littnan said, is building

an appropriate age and sex structure for the population.

"We're about to lose all of our females," he warned the commission.

Faced with this population shift, presenters at the commission's meeting discussed how efforts in the NWHI might change, as well as some of the issues managers will have to contend with as the MHI population grows. Already, the science center documented 12 monk seal hookings and four deaths last year, two of which were seals shot on Kaua'i – a male and a pregnant female – as they rested on the beach.

David Schofield of NMFS' Pacific Islands Regional Office detailed the history of the handful of "problem seals" in the MHI that have been born on populated beaches, imprinted on people, and/or are being fed by them. He noted that in addition to relocating and recapturing these animals, resource managers have resorted to shaking palm fronds at them as a form of "aversive conditioning" and might even consider using rubber bullets.

According to Littnan, the PIFSC is developing a MHI research plan for monk seals that will include population surveys, foraging ecology studies, and research on their health and diet, among other things.

"We have really great baseline data, but we have an opportunity to do in the Main Hawaiian Islands something that we weren't able to do in the Northwest and that's really, starting from scratch, learning about the ecology of the animals down here.... It's a daunting task and perhaps a little bit lofty, but I think it should be doable," he said.

He added, "The whole gist of doing this is it's great that we're all thinking that the MHI population is a wonderful thing, but we need to make sure that we're paying attention to where that's going and what that might possibly do in the future. Right now we're focused on animals disturbed on the beach or a dog that is after mom and pup pair, but this population could grow [and lead to] much more difficult problems to deal with, such as fisheries interactions and the like."

The possibility that interactions in the MHI might limit the population's growth was not lost on commissioner Douglas Wartzok, who urged the commission to not get too carried away with "one line on a graph that has a limited amount of data behind it." He said that managers thought they knew what they were doing with seals several times in the past and that there are many potential problems – like fishery interactions – in the MHI.

With regard to protecting the NWHI population, Lowry said that things can probably be done to improve the ecosystem there,

but they would be difficult to identify. Even so, he said that managers need to take actions to increase the odds that the NWHI ecosystem will favor monk seal survival. He added that the monk seal recovery team, which met earlier in the week, also believed that relocating seals may be necessary in the long run and suggested drafting a white paper, accompanied by a small workshop, to address the broad range of problems the seals face.

Commissioner David Laist suggested that the white paper should perhaps include an analysis of how and whether spiny lobster restoration in the NWHI might also help monk seals. The lobster population there used to be dominated by spiny lobsters, but, now, after years of overfishing, it is dominated by slipper lobsters.

In the near-term, Littnan said, "interventions" such as captive care and translocation, among others, will be aimed at fortifying population age structures by increasing the number of female seals of different age classes.

"Although the ultimate goal is to increase abundance to meet recovery goals, in the interim, building healthy age structures that maximize the population's reproductive value is an appropriate objective for designing the interventions... So it may not seem like we're making a lot of changes, but it's a critical first step," he said.

In addition to propping up the female population, PIRO deputy administrator Mike Tosatto said his agency plans to continue its efforts to control or kill sharks that are preying on monk seal pups at French Frigate Shoals in the NWHI. The state Board of Land and Natural Resources has reluctantly granted permits to NMFS to kill or harass sharks attempting to feed on seal pups. Although the last permit was for non-lethal actions only, they were poor deterrents. As a result, NMFS will again seek permission to kill sharks.

"We all know that sharks will predate. They do it at places other than French Frigate Shoals, but we want to get French Frigate Shoals back to the level of what we'll call 'natural predation.' What's happening up there now is natural in a sense, but it's different than every other island out there. We need to address it," Tosatto said.

Critical Habitat

In July 2008, KAHEA: The Hawaiian-Environmental Alliance, The Center for Biological Diversity, and The Ocean Conservancy filed a petition with NMFS to revise the existing critical habitat designated for monk seals to include coastal and marine areas in the MHI, and to extend critical habitat in the NWHI to include important foraging grounds.

Littnan told the commission that after the petition was filed, his agency increased its efforts to geo-reference its historical data and is in the process of developing a GIS application to map the density and distribution of seal haul-outs to “try and get a handle on which areas are going to be more important for seals now and in the future.”

The NMFS plans to issue a proposed rule on critical habitat in 2010 and a final rule in 2011.



Saving the Sleeping Spinners

I think this is a really sad situation,” Lowry said of the glacial pace at which the swim-with-dolphin tours at Kealahou Bay are being dealt with.

Five years ago, when the commission met in Kona, the Board of Land and Natural Resources had just adopted a rule aimed at stamping out statewide swim-with-dolphin tours, which were not only proliferating, but were engaging dolphins when they would otherwise be resting. But because the Marine Mammal Protection Act prevents states from adopting their own rules relating to marine mammals, the state has been handcuffed in its efforts to control the tours.

Today, the tours continue unabated, and according to Marie Chapla Hill of the University of Hawai'i's Joint Institute of Marine and Atmospheric Research, there is evidence that they are affecting the dolphins.

In Hawai'i, there are seven proposed stocks of spinner dolphins. They tend to forage along the 20 meter isobath and, on O'ahu, they rest between noon and 4 p.m. On the Big Island, they rest earlier, she said.

In 2004, Hill said, a study by Dr. Jan Ostman-Lind suggested that dolphin tours had caused a population of spinner dolphins to abandon their known resting site at Makako Bay on the Big Island's west coast. Tours also interfere with a pod's swimming patterns, she added, explaining that when a boat approaches a pod, the pod will split into two then reform after the boat passes.

Hill said that because approach rules are difficult to enforce, managers are considering establishing time/area closures in Hawai'i.

Although NMFS does plan to draft rules to deal with the issue, PIRO's National Environmental Policy Act specialist Jayne Lefors told the commission that her agency is holding off on this effort until a more thorough population assessment of spinner dolphins is completed. Jim Lecky of NOAA's Office of Protected Resources added that the extra research is being conducted to ensure that whatever

rules the agency ultimately issues, they won't be struck down later in a lawsuit for being arbitrary or capricious. Since the current information on spinner dolphins doesn't meet that standard, proving that spinner dolphin populations are affected by these tours would help in any defense, he reasoned.

While he didn't argue against collecting population data, the commission's general counsel, Michael Gosliner, pointed out that under federal law, an agency doesn't have to show that a population is being impacted before it adopts rules. All that needs to be proved is that individual animals are being affected, he said, adding that the evidence Hill presented suggests that this threshold has already been crossed.

“I don't think the hurdle is as high as suggested,” he said.

According to Lefors, PIRO has no dedicated funding for spinner dolphins. Even so, she said NMFS plans to issue a draft environmental assessment on a proposed rule in 2011 and adopt a rule – most likely a time/area closure – the following summer.

But even if a rule to protect spinner dolphins goes through in a couple of years, she added, there may need to be a broader, overarching rule about marine mammal tours in general, since some tour operators have been known to seek out pilot whales when they can't find spinner dolphins.



Hawaiian False Killer Whales

Last fall, the Natural Resources Defense Council filed a petition with NMFS to list Hawai'i's insular stock of Hawaiian false killer whales (*Pseudorca crassidens*) as endangered and designate critical habitat for it. Last year, after successfully prodding NMFS to classify the Hawai'i longline fishery as a Category I fishery (one that frequently and incidentally kills or injures marine mammals), Hui Malama I Kohola, the Center for Biological Diversity, and Turtle Island Restoration Network filed a motion in U.S. District Court in Honolulu aimed at getting the agency to take the next step under the Marine Mammal Protection Act: namely, to develop a Take Reduction Plan and a Take Reduction Team for the whales. At the commission's meeting, cetacean researchers and NMFS representatives addressed the status of the whales and the agency's efforts to protect them.

According to Robin Baird of the Cascadia Research Collective in Washington state, Hawai'i's false killer whale population is in dire straits. A 2006 population estimate of cetaceans around Hawai'i indicated that false

killer whales were the least abundant species among the 18 that were surveyed.

Typically considered an ocean-going, or pelagic, species, the Hawai'i stock in 2008 was split into two by NMFS – an insular stock and a pelagic stock. Baird said the pelagic stock is composed of 484 individuals, while the insular stock numbers only 123. The stocks have an annual potential biological removal (PBR) of 2.4 and 0.8, respectively. (The PBR reflects the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to become or remain sustainable.)

Not only is the insular stock tiny, it's declining, Baird reported. In 1989, with a population of 470 individuals, the insular false killer whale was the third most-encountered cetacean in Hawai'i surveys, he said. Today, it's the ninth most-encountered species.

What's causing the decline? According to Baird, a number of things. He said that the whales, adult males in particular, have PCB levels that exceed the level where immune system function and reproduction begin to be affected. He also listed the different ways Hawai'i's fisheries may be impacting the population as the whales feed primarily on the same large game fish that are targeted by Hawai'i's fisheries.

There may just be fewer fish to eat, Baird suggested, citing data from the Western Pacific Fisheries Management Council that show there has been a drop in catch per unit effort for certain fish species, yellowfin tuna, for example. Baird also suggested that swallowed fish hooks and gunshots from angry fishermen may also be contributing to the whales' decline.

Bycatch by longliners is yet another cause. Baird said that the Hawai'i longline fishery has exceeded the PBR for false killer whales every year since 2000. Over the past five years, the fishery has killed an average of four to nine false killer whales within the Hawai'i Exclusive Economic Zone. Between 1997 and 2007, the fishery killed or seriously injured 124 whales (a conservative estimate, according to Baird). In 2009, the stock experienced one of the highest levels of takes by the Hawai'i longline fishery, according to Erin Oleson, a cetacean expert with the PIFSC.

To better understand the extent to which fishing is affecting the insular population, Baird suggested that whale interactions with shortline and kaka line fisheries, which use techniques similar to longline fishing but drop shorter lines, need to be documented. Right now, neither fishery is managed by the federal government and, as a result, no ob-

servers have been required to document any interactions.

Oleson added that the PIFSC plans to work with the Hawai'i Longline Association to place acoustic recorders on longline gear to help determine when, exactly, whales are interacting with the lines. If the whales are taking fish while the line is being hauled rather than when it is soaking (which is what longliners suspect is happening), there may be a way to mitigate interactions by disguising or muffling the sound of gear retrieval, she said.

To address the lawsuit, NMFS is in the process of creating a false killer whale Take Reduction Team, which will, according to TRT coordinator Nancy Young, include those who filed the petition.

"Hopefully, the TRT can get consensus without litigation," said Lisa Van Atta, assistant regional administrator for the NMFS PIRO Protected Resources Division.

High Seas Stock

It took time and some prodding to get the NMFS to recognize the Hawaiian stock of false killer whales and now that it is officially a "strategic" stock (a stock where the level of human-caused mortality exceeds the PBR), the agency can, and is obliged to, take steps to mitigate harm. According to Oleson, what she calls the high-seas/Johnston stock is also in trouble, but has not yet been recognized. She said that based on a 2005 abundance estimate of that stock by the Southwest Fisheries Science Center, the number of false killer whales caught by the U.S. fleet exceeds the PBR for that species.

"If it were to exist, it would be considered a strategic stock," she said.

BOARD TALK

Board Adopts Penalty Guidelines For Violations at Kealakekua Bay

The state Board of Land and Natural Resources has approved new civil penalty guidelines for "minor" violations at Kealakekua Bay on the island of Hawai'i. For years, the state has struggled to control the swarming visitors to the popular bay, where a local population of spinner dolphins and

nearby historic and cultural sites have attracted tourists – and tour operators – who haven't always been mindful of their impacts on the area's fragile resources.

Constant foot traffic and landing and launching of vessels have already begun to damage cultural sites, as well as the shoreline



Other Cetaceans

Erin Oleson also reported on NOAA's attempts to survey cetaceans throughout the Pacific island region, which covers 1.8 million square miles of ocean. Previous surveys have already identified 117 cetacean stocks in the region. Hawai'i has the most, with 34, followed by Guam (17) and the Commonwealth of the Northern Mariana Islands (15). Johnston Atoll and Palmyra both have 14, and Wake, Howland/Baker, and Jarvis have six or fewer.

Collecting additional population data for those stocks and others will not be easy. The cetacean program is relatively new, receiving its first funds – \$96,000 – in 2005. Since then, the program has grown to include one to two full-time employees, one to two contract staff,

and a small boat. Even so, Oleson noted that it would take 513 days of sea surveying to cover the entire PIRO area.

"We won't have enough ship time," she said, adding that her program is working with the Southwest Fisheries Science Center to help cover some of its large-scale survey needs.

Last year, with an annual budget of \$365,000, the program surveyed the MHI for abundance of 12 insular species. This year, the program plans to study cetaceans in CNMI, Guam, Palmyra, and Wake. The next large-scale Hawai'i survey will begin in 2011.

In addition to ship-based surveys, the program plans to use acoustic monitoring data to learn more about Pacific cetaceans. She added that her staff is confident it can identify a handful of species, including pilot whales, false killer whales, and Blaineville's beaked whales, based only on acoustic information.

— Teresa Dawson

For Further Reading

The following articles on false killer whales are available at our online archives, at www.environment-hawaii.org. Archive access is free to current subscribers. All others must pay \$10 for a two-day pass to view the full articles:

- ◆ "New & Noteworthy: Whales on the Line" (November 2005)
- ◆ "New & Noteworthy: Whales, Dolphins Unprotected from Fishers" (February 2009)
- ◆ "New & Noteworthy: Focus on Cetaceans" (November 2009)

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and reef at Ka'awaloa, a popular snorkeling spot and access point to the bay's Captain Cook Monument, which is part of Kealahou State Historical Park.

Last January, the Department of Land and Natural Resources released a Kealahou Stewardship Area Management Plan, which recommends prohibiting all vessel landings (including kayaks) and posting "no landing without special use permit" signs along the Ka'awaloa shoreline. Because DLNR rules prohibit the unauthorized landing, launching, mooring and anchoring of vessels fronting the shores of state parks where appropriate signs are posted, violators could be fined \$2,500 to \$10,000.

"Is a stand-up paddleboard a vessel? What about a boogie board, a small swimboard or a surfboard? And who knows what they might come up with next?"

— Betsy Morrigan

The plan's recommendation to allow only those with special use permits to land is a departure from the Land Board's longstanding policy to protect natural resources first, the public's interests second and commercial interests last. Perhaps in acknowledgement of this policy, the plan does note, "Non-commercial kayak landings may be permitted at some future time when infrastructure and facilities are in place and in accord with [the Kealahou Historic] Park Master Plan." The DLNR is currently still receiving public comment on the master plan.

To date, the DLNR has permitted two companies to provide guided kayak tours to Ka'awaloa, which can also be reached by trail. According to a report to the Land Board by DLNR staff, once the department erects signs

at Ka'awaloa and on the bay's Napo'opo'o Landing (where most kayaks launch), anyone beaching or launching vessels along the Ka'awaloa shoreline or mooring at the wharf adjacent to the Cook Monument without a DLNR permit "will be held in violation of the State Parks boating rule."

Instead of pursuing those violations as petty misdemeanors in the criminal courts, as has been done in the past, the DLNR plans to use its new Civil Resource Violations System, which the Land Board adopted last year to address minor violations in a more expeditious manner.

Under the new guidelines adopted by the board at its November 19 meeting, violators

of the boat landing rule may be fined anywhere from \$30 to \$200, depending on the number of times they have violated the rule and whether or not they paid their fines within 21 days.

Geoff Hand of Adventures in Paradise, Inc. (one of the permitted kayak tour operators) submitted testimony fully in favor of the board's sanctions. Favoring increased fines were Karen Hand, owner of Adventures in Paradise, and Betsy Morrigan, owner of the Hawai'i Pack and Paddle (the other permitted company).

Morrigan recommended fines of \$100 to \$750 for independent kayakers and \$1,000 to \$3,000 for illegal guided tour companies. "Surely in terms of the DLNR's rules at this very special state park, this unauthorized landing is an infraction as serious as speeding on the highway. So make it worth the state's while and change them more [than \$30] for disobeying the law," Morrigan wrote.

With regard to unpermitted tour operators, Morrigan noted that there are three unpermitted companies that have landed at

Ka'awaloa for years. Any fine for a violation by a guest on one of these companies' tours should be paid by the tour operator, not the tourist, she wrote in her testimony to the Land Board.

"For these chronic law-breakers, a \$30 mail-in fine is not even a slap on the wrist. It is barely a mosquito bite.... This tiny \$30 fine will be merely viewed as the cost of doing business. These three tour companies are already charging \$150 or more per person for this trip and claiming to their guest that they have permits and are authorized to land."

Also concerned that illegal operators would find ways around the rule, Morrigan asked the Land Board to better define what a vessel is.

"Is a stand-up paddleboard a vessel? What about a boogie board, a small swimboard or a surfboard? And who knows what they might come up with next? The 'snorkel torpedoes' – are they a 'vessel'? There are many people on various waterboards and devices such as these. Is landing legal or illegal for them? Believe me, if landing is not illegal for paddleboards and suchlike, there will be companies springing up overnight offering stand-up paddleboard tours and rentals to KBSH Park, landing at Ka'awaloa!" she wrote.

Finally, she asked that those of Hawaiian descent or a school or halau paddling a small Hawaiian non-motorized craft for personal, family heritage, spiritual, gathering, or cultural reasons be allowed to land.

The DLNR's Bin Li, who has been incrementally developing penalty guidelines for the CRVS, told the board it shouldn't be a problem to establish a permit process for cultural uses. With regard to increasing the fine level, Li said, "we can test the water now and revisit the issue."

At the November 19 meeting, Maui Land Board member Jerry Edlao asked whether paddleboard tours might be a concern. Martha Yent of the State Parks staff responded that right now, the signs only prohibit "vessels," which would exclude paddleboards.

— Teresa Dawson

