

The Nature of Birds— Flocking to Avoid Predators

by Frances Wood, Master Birder

Perhaps you've noticed Bushtits bouncing like gray puff-balls from bush to tree to shrub, as they move through an open deciduous forest. They form into loose flocks and wander along with no apparent agenda other than happily sampling insects and grubs.

Or perhaps you've observed tight flocks of shorebirds performing aerial displays, alternately flashing their dark backs and white bellies, as they move in one undulating cloud over the Skagit Flats.

Birds flock for several reasons. They flock for more efficient feeding. Think about it. A bird by itself must be alert at all times to attack from all sides. If little Tweety spends a large part of the day watching for predators, little time is left for eating. But two birds feeding side by side theoretically can cut their watching time in half, and spend more time searching for food. Now put these two birds into a flock of 10 or 25 or 100, and their feeding time increases exponentially. Also, the more eyes looking for rich feeding areas, the more likely an area will be found. And a group of birds can overwhelm other, individual birds that may have established a feeding territory.

However, the main reason small birds flock is to minimize vulnerability from predators. For most birds, the first defense against predators is hiding. Birds have developed into fast fliers for just this purpose. They zip into trees, scurry into thick brush, or just get the heck out of the way. But hiding is not always an option, so flocking developed as the next best line of defense.

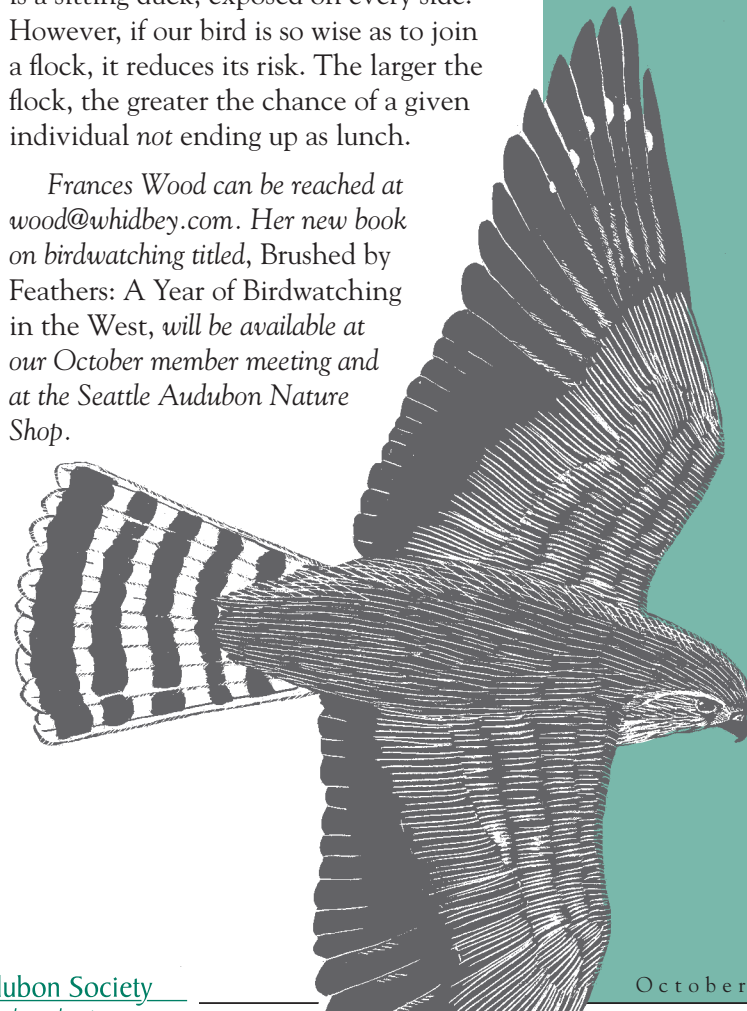
A flock's movement can confuse an attacking predator. This is one reason, presumably, why shorebirds fly in a tight

swarm. It has been suggested that a huge undulating cloud of shorebirds gyrates to distract the attacking Peregrine Falcon and make it more difficult for the attacker to pick out one bird. If you watch these clouds of shorebirds carefully, you'll see that the largest mass of birds within the flock seems to shift away from the attacker, leaving a smaller domain of danger, the spot closest to the attacker.

Smaller passerines often form into flocks of mixed species. Near-sighted gleaners, such as vireos and warblers, flock with far-sighted salliers like flycatchers, thereby taking advantage of the latter's better vision. Constant chattering among flock members keeps the flock together, and one alarm call scatters the group to seek shelter.

There is one more advantage of flocking as a defense from predators. Again, it's the safety-in-numbers game. A lone bird is a sitting duck, exposed on every side. However, if our bird is so wise as to join a flock, it reduces its risk. The larger the flock, the greater the chance of a given individual *not* ending up as lunch.

Frances Wood can be reached at wood@whidbey.com. Her new book on birdwatching titled, Brushed by Feathers: A Year of Birdwatching in the West, will be available at our October member meeting and at the Seattle Audubon Nature Shop.



How to Contact the Mayor and the Seattle City Council

Mayor Gregory J. Nickels
P.O. Box 94749
Seattle WA 98124-4749
206-684-4000
mayor's.office@seattle.gov

City Councilmembers
P.O. Box 34025
Seattle WA 98124-4025
Message Center
206-684-8888

Jim Compton
206-684-8802
jim.compton@seattle.gov

Richard Conlin
206-684-8805
richard.conlin@seattle.gov

David Della
206-684-8806
david.della@seattle.gov

Jan Drago, Pres.
206-684-8801
jan.drago@seattle.gov

Jean Godden
206-684-8807
jean.godden@seattle.gov

Nick Licata
206-684-8803
nick.licata@seattle.gov

Richard McIver
206-684-8800
richard.mciver@seattle.gov

Tom Rasmussen
206-684-8808
tom.rasmussen@seattle.gov

Peter Steinbrueck
206-684-8804
peter.steinbrueck@seattle.gov

To receive your copy of the
2004 *They Represent You*,
*A Citizen's Guide to Elected
Officials*, call 206-329-4848 or
e-mail info@seattlelwv.org.

Unhealthy Forests Remain Unhealthy

by Alex Morgan, Conservation Director

The Board of Natural Resources has once again chosen short-term profit at the expense of future generations. In early September, the board chose to dramatically increase logging in Western Washington, putting wildlife, clean water, and the long-term future of school funding in jeopardy. The board chose not to protect old-growth forests, chose to increase the number of clearcuts, chose to increase logging in sensitive watersheds, and chose not to address the public's demand for green FSC-certification of state lands.

Spurred on by the timber industry, the board upped the cut in the name of healthy forestry. Commissioner Doug Sutherland's spokesperson, Todd Myers, said much of the state's forest is overstocked with trees and needs to be thinned to improve the ecosystem. However, the plan does nothing to assist dangerously unhealthy forests. A close examination of the numbers shows that 63% of our forests are currently in an unhealthy state, and under the new harvest plan, 61% of those same forests will remain unhealthy 60 years from now.



Essentially the Board of Natural Resources has chosen to increase the cut at the expense of future generations. The board has done this in the past, resulting in a wealth of problems for us to deal with right now, including declining populations of fish and wildlife, erosion and landslides, and unhealthy drinking water in Whatcom County. Unfortunately, declining populations of fish and wildlife cost much more to manage than healthy ecosystems maintained through sustainable logging and resource conservation.

It's unfortunate that after three years of public input, regular meetings and hearings, and public comment periods at meetings, the Board of Natural Resources chose to ignore a large portion of the public—the portion that cares about healthy watersheds, healthy forests, old-growth forest protection, and a healthy environment.

Instead, the Board of Natural Resources chose to disguise this dramatic increase in logging as healthy forestry. Unfortunately, the real losers in this decision are the future generations in this state that will pay for the shortsightedness of this board.

Get Involved in Local Land-use Decisions!

by Matt Mega, Urban Habitat Program Director

Seattle Audubon is engaged in many key land-use issues throughout the Puget Sound region. We strongly encourage citizen involvement. Two of the top issues under discussion are the King County Critical Areas Ordinance (CAO) and the City of Seattle's Comprehensive Plan.

While both processes are well under way, it is not too late to voice your opinion. By state law, both documents must be resolved by the end of this year.

If you would like information about either document or information on how to comment, please contact Matt Mega, Urban Habitat Program Director, at 206-985-6841, or mattm@seattleaudubon.org. You can also visit the King County CAO web site at www.metrokc.gov/ddes/cao/ or the City of Seattle's web site at www.cityofseattle.net/DCLU/Planning/comprehensive/.

The Elwha Dams— Years of Struggle Yield a Victory

by Jerry Joyce, Science Chair

The Elwha River on the Olympic Peninsula was once a thriving environment and home to vast salmon and steelhead runs, as it flowed freely from the Olympic Mountains to the Strait of Juan de Fuca. But in 1910, the first dam was built on the river to power a paper mill, disrupting the river's flow and blocking all salmon and steelhead from access to 70 miles of their native waters.

For many years, Seattle Audubon has been working to restore the magnificent, free-flowing nature of the Elwha River. Finally, the dream—a hard-won victory—is about to become a reality.

When the Elwha Dam and the Glines Canyon Dam (finished in 1927) sought license renewal in 1976, the Federal Energy Regulatory Commission (FERC) was ready to relicense the dams and guarantee their continued existence, until other government agencies raised objections. Although a legal battle ensued, it seemed inevitable that FERC would relicense the dams and continue to block the river. However, Rick Rutz, Science Advisor at Seattle Audubon, worked doggedly on the issue and found that allowing dams in a national park was prohibited by the 1921 Power Act. Rick's work changed the entire story of the dams.

On May 15, 1986, Seattle Audubon Society, Friends of the Earth, Olympic Park Associates, and Sierra Club filed a motion for intervention on the relicensing, calling for the removal of the dams and full restoration of the ecosystem. In November 1986, this coalition was granted conservation-intervenor status. Later, the National Marine Fisheries Service, US Fish and Wildlife Service, Washington Department of Wildlife, National Park Service, Lower Elwha

Klallam Tribe, and Point No Point Treaty Council became intervenors as the Joint Fish and Wildlife Agencies (JFWA).

The conservation intervenors and the JFWA made comments and fought legal battles. Congress finally intervened with the Elwha River Ecosystem and Fisheries Restoration Act, which was signed into law in 1992.

Despite the law, however, Seattle Audubon and other intervenors needed to remain alert and tenacious in order to prevent FERC from relicensing the dams and thus thwarting the restoration. Many other environmental and fish and wildlife organizations, as well as several governmental agencies, joined the effort as the fight continued. Although most of Seattle Audubon's active participation ended in 1993, when we won a decision in the 9th Circuit Court against FERC's authority, we carefully monitored the struggle as environmental impact statements, environmental assessments, and negotiations continued.

Victory is now at hand. On August 6, 2004, the National Park Service signed agreements with the City of Port Angeles and the Lower Elwha

Klallam Tribe to begin engineering work immediately, and to start the removal of the dams in 2008. The 108-foot-tall Elwha Dam and the 210-foot-tall Glines Canyon Dam will be the largest dams in the US to be removed.

This would not be taking place were it not for the tenacious and enduring struggle by Seattle Audubon and all the other groups that have shown such dedication to restoring this gem of the Olympics.



Elwha Dam, lower right

© 2004, National Fish and Wildlife Service

The Predator-Prey Relationship in the Bird World

by Ruth Taylor, Master Birder



An alert juvenile male
Cooper's Hawk

© 2004 Paul Bannick

For many birders, “feeding the birds” takes on a new and unwelcome meaning when a Sharp-shinned Hawk snatches a songbird from the feeder and carries it off for a meal. While some birders think this is cruel, predation is a natural process that goes on all around us and is one mechanism for balance in ecosystems.

Rather than label this diminutive raptor as evil, look at how the Sharpie is adapted to catch small

birds in wooded habitat. Its long tail and rounded wings allow it maximum maneuverability, and its relatively soft, flexible feathers bend rather than break when they make contact with branches. Its long toes are designed for catching birds. One of the “sprinters” of the raptor world, it can fly very fast for a short distance and is said to reach full speed within one second after beginning a pursuit.

What Makes a Bird a “Bird of Prey”?

The fish-eating heron or insectivorous flycatcher is as much a predator as the fish-eating Osprey or the bird-eating Peregrine, but the former are not considered birds of prey, as they lack sharp talons and hooked beaks for catching, holding, and tearing. Because of their talons and beaks, hawks, eagles, falcons and their relatives, and the largely nocturnal owls are considered birds

of prey or raptors. Each has specific adaptations for efficient capture of the prey upon which its life depends. The long-winged, long-tailed Northern Harrier, quartering a field in search of voles, exhibits different adaptations and strategies from the Goshawk barreling after a squirrel in a Cascade forest or the Red-tailed Hawk chasing a rabbit across a meadow. Owls also have specific adaptations for hunting at night that diurnal raptors lack.

Predator and Prey—The Balance

Ideally, each predator catches its prey with minimal effort and risk, while the prey tries to avoid being caught and eaten without expending too much effort. The young raptor learns by experience, and, if it survives to adulthood, becomes an efficient predator that knows where and when to catch the inexperienced, unwary, and unfit. Prey species are aware of being hunted and learn from their escapes when and where they are most and least vulnerable. Evolutionary biologists consider the ongoing interactions between predator and prey to be an arms race. Each evolves a better way to achieve its goals. The prey trying to save its life should have stronger selection pressure and thus an evolutionary advantage in outwitting the predator, which merely misses a meal if it's not successful.

Reaction of Prey

The most efficient hunting strategy for a raptor is surprise. However, when the intended prey spots the predator, its reaction can influence the outcome. Alarm calls, certain displays, and singing may signal to the raptor that the prey is aware of its presence and won't be an easy meal. When a raptor approaches, prey may freeze, take cover, use techniques such as speed, erratic flight path, gaining altitude, or maneuvering in a flock to escape, or even fighting back if caught.

Selection of Prey

Experienced raptors have learned to use as little energy as possible to capture prey and to balance the “energetic cost” of the attack against the potential benefits of energy taken in from the prey. Prey that are difficult to capture may offer greater rewards in terms of energy than those that are easier to catch. Raptors may select prey based on its abundance and ease of capture or upon its energetic reward. This can be considered a choice between opportunistic hunting and selective hunting, but the two are often combined. For instance, a rodent-eating raptor may hunt in a field with an overabundance of mice, but choose to capture prey of a certain age or sex. Selection may also be a result of prey behavior. An unusual, disabled, or unfit individual may become an obvious target during a chase or may stand out in a flock that the raptor is pursuing.

A raptor may hunt certain species because of a “search image” it has developed, based on past success. It may even bypass what appears to be suitable prey while looking for the target species, choosing to catch an individual of one certain species out of many that are available. Peregrines and pigeons may be an example. Wherever pigeons and doves occur in the Peregrine’s range, they often make up the bulk of the its diet. Pigeons and doves are fast, agile, strong fliers with loose body feathers and are difficult to capture. Yet Peregrines pursue them relentlessly and capture significant numbers. Whether this is because of the pigeons’ nutritional value, taste, or habits is unknown.

Impact of Prey on Predator

The amount of prey that is available affects every aspect of a raptor’s biology—its diet, population density, pair formation, reproductive success, survival, and movements. Fluctuations in prey availability may result in a change in predator numbers because of changes in reproduction, mortality, immigration, and emigration. Changes in the availability of various types of prey may have a different effect, depending on whether the raptor has the ability to switch from one prey species to another when the numbers of its favorite or preferred species are low. Some raptors lack this flexibility and will move to another area where the target species is more available.

Impact of Predator on Prey

If a raptor doesn’t reduce the number of breeding individuals of its prey, then predation has no impact on the long-term survival of the population, unless another factor that limits prey is operating. For instance, a predator that takes gravid or nesting females would have a greater impact on the prey population than predation on the same number of juveniles. Human-induced loss of suitable habitat can limit both predator and prey.

While the traditional view is that raptors take the “doomed surplus” and are controlled by changes in prey abundance, there are other scenarios. Raptors that feed largely on prey with cycles of abundance can at times control the cycles of their prey. An example is the large numbers of Goshawks and Great Horned Owls from the boreal forest that irrupt southward to prey heavily on grouse, after population crashes of the raptors’ primary prey, snowshoe hares, farther north. These irruptions depress the grouse populations.

It is rare for predators to hunt their favored prey to extinction. Usually, when a prey population is decimated, it isn’t profitable for the raptor to hunt the few

remaining individuals, and it moves on. However, if the raptor has enough alternate prey available to allow it to remain in the area, it could drive its original prey to extinction by taking a greater proportion of the prey as the numbers decline. Breeding raptors may reduce prey near the nest site, but normally have minimal impact on the total prey population.

The Web of Life

Predator-prey relationships (*or interactions*) are a complex and fascinating part of the web of life. Studies of these interactions are ongoing, and the results are sometimes equivocal, as scientists try to figure out not only what happens but why it happens. If you are fortunate enough to observe a raptor hunting, try to note how it hunts, the habitat where it hunts, what it is trying to catch, and what its intended prey does to try to avoid being a meal. Rather than seeing this as killer versus victim, look at it as a natural process that’s part of the much larger picture of how an ecosystem works. Observing this and then asking questions can open a window into a complex world.



Seattle Peregrine Bell, finishing a meal

© 2004 Noemi Aguilera