

GALAPAGOS SEA LIONS AND FUR SEALS

by Fritz Trillmich

The order Pinnipedia (most closely related to the Carnivores) comprises three families:

- a) Earless seals: true seals or phocids (Phocidae)
- b) Eared seals: sea lions and fur seals (Otariidae)
- c) Walruses (Odobenidae)

All species recorded in Galápagos waters belong to the family of the eared seals (Otariidae). They can easily be distinguished from the true seals (Phocidae) by their external ears and their way of locomotion. True seals have very weak foreflippers, and cannot turn their hindflippers forwards under the body. Therefore, their flippers are not much help in terrestrial locomotion which is achieved by sinusoidal movement of the body, or a hitching shuffle. Eared seals can walk efficiently on land, however, with their strong forelimbs and rotatable hind flippers.

When swimming, true seals propel themselves with sideways thrusts of the hind flippers, whereas sea lions and fur seals swim with winglike up and down strokes of their foreflippers.

Three species of eared seals have been recorded from the Galápagos, the Galápagos sea lion, the Galápagos fur seal, and the South American sea lion (only one report of the discovery of a dead male, by Wellington and DeVries 1976). The S. American sea lion will be omitted here.

- I. *Galápagos sea lion* – *Zalophus californianus wollebaeki*
Spanish: Lobo de un pelo (de Galápagos)
French: Otarie de Galápagos
German: Galápagos Seelowe

SYSTEMATICS AND CLOSEST RELATIVES

The Galápagos sea lion is considered by Scheffer (1958) to be a subspecies of the California sea lion (*Zalophus c. californianus*). Morphologically it differs from the Californian race mainly by its smaller size. The considerable confusion about Galápagos sea lion systematics is fully reviewed in Orr's (1966) article on the mammalian fauna of the Galápagos.

FIELD IDENTIFICATION (see also Fig. 1)

Adult males are easily recognised by their very jutting foreheads and great size. Females are smaller and lack the protruding forehead. Neck and abdomen appear relatively longer than in fur seals, the snout is long and narrow and not as upturned as in the fur seal. Sea lions have much smaller eyes, relative to head size, than fur seals. Some males have light grey backs, but all other animals look almost black when wet. On land the fur lightens as it dries. Coloration is somewhat polymorphic, most animals are light grey-brown to golden-brown, or occasionally grey or blackish. The adult fur is inconspicuous especially when wet.

As a rule sea lions move slowly when on land, and have great difficulty in climbing.

The dark brown of newborn pups fades gradually until after 3 - 5 months it has become very light brown, almost adult color. Pups molt into the adult fur when about 5 months old.

Initially, immature fur seals and sea lion pups may be confused with each other, but head form and land locomotion can always clearly distinguish them, as well as the type of fur on closer inspection.

STATUS OF THE POPULATION

The Galápagos sea lion population is at present estimated at about 40,000 animals. Tourist sites with big sea lion colonies are Pta. Suarez (Española), South Plaza Island, Mosquera (in the channel between Baltra and North Seymour), Rábida, South James Bay (Santiago), and Pta. Espinosa (Fernandina). The last colony has strongly decreased in numbers during the last years.

This species has never been commercially exploited, although occasionally adults have been killed for their skins, or to provide sea-lion tooth necklaces for tourist sales. This seems (almost?) to have died out in the last few years.

An epizootic disease, the exact nature of which is still unknown, has spread throughout the population since about 1970, and may have killed as many as 50% of the animals. But some infected animals are known to have recovered, so that we can be sure extinction of the subspecies is not to be feared from this cause.

DISTRIBUTION WITHIN THE ISLANDS AND HABITAT

Sea lions breed on all major islands and many small islets and are regularly seen on all islands, and even rocks, save for a few small extremely steep ones. As breeding habitat, sea lions prefer gently sloping beaches, whether sandy or rocky. Any such area easily accessible even at low tide (no extended intertidal with rough rocks or difficult lava formations), is very likely to harbour a sea lion colony; although in some areas introduced dogs may have vitiated such habitats. Park wardens repeatedly report observations of dogs killing sea lion-pups.

NATURAL HISTORY

The Galápagos sea lions reproduce mainly during the cooler ganna season (May–June to December–January). The reproductive season lasts for about 6–8 months, depending on the size of the local population. Births occur 1–3 months earlier on Fernandina, the most western island of the archipelago, than on Espanola, the island furthest to the southeast. The causes for this time difference in the onset of the reproductive season are unknown.

Females bear one pup (no unequivocal evidence of twin births exists) which they nurse until the next is born. Some mothers will then nurse both pup and one year old immature together. As long as a mother does not have another pup, she may continue nursing an initial one for up to 3 years, or even longer.

The mother usually stays with the newborn pup for the first week. After this, she regularly goes off to feed by day, coming back almost every night to suckle the pup. When approaching the shore from the sea, she begins to utter a special pup-attraction call, continuing on land as she moves up to the place she left her pup. Usually the pup responds at once, running to its mother and beginning to suckle, after being subjected to her final olfactory check.

Mothers nurse only their own pups.

Females come into oestrus roughly one month after parturition. After copulation the fertilized egg remains floating in the uterus for about two months. It then implants and begins to develop. As this development takes about nine months, an annual cycle of birth and copulation is thus made possible.



Fig 1. *left* adult female sea lion, *right* adult male sea lion.



Fig 2. *left* adult female fur seal, *right* adult male fur seal.

drawings by Krisztina Trillmich

Pups begin to swim independently of the mother when about one to two weeks old. They very often play and sleep together in groups. Any adults which happen to be sighted with such groups are not protecting or guarding the pups in any way, they are merely "disinterested" animals having a rest. Shortly after the molt the young begin to fish for themselves, thus becoming increasingly independent of the mothers' milk.

Adult males claim sections of the coastline as territories which they defend vigorously against trespassers. They hold these territories for from 10 days to 3 months or longer, depending on the population density and the time of the season. Generally, the denser the population of a beach and the closer to the peak of the reproductive season, the shorter is the territory maintenance of individual bulls.

The bulls court females in oestrus for extended periods, following them incessantly. Most copulations take place in the water. Although bulls sometimes try to herd females, they have no direct influence on their distribution on land, and cannot prevent their moving freely between the territories of different males.

During my two-year study of the behaviour of the Galápagos sea lion, I failed to make a single convincing observation of the formerly described "paternal" behaviour of sea lion bulls to pups (see Eibl-Eibesfeldt 1955, Barlow 1972, 1974). If bulls have been observed "chasing" pups and juveniles out of the water onto land, this phenomenon may equally well be due to a flight reaction of the youngsters from any fast-moving animal advancing upon them. A female suddenly entering a tidepool just as easily sends pups stampeding up onto land. Bulls seen chasing sharks away from the colony are not necessarily defending pups or juveniles, but may be following the normal mobbing response of sea lions against sharks, shown even by immature sea lions. ('Mobbing' means a group harassment of a predator by its potential prey).

Sea lions feed mainly during the day. In fresh vomit found occasionally, small fish ('sardines') up to 20 cm long predominate.

- II. *Galápagos fur seal* — *Arctocephalus galápaguensis*
Spanish: *Lobo de dos pelos (de Galápagos)*
French: *Phoque au fourrure (de Galápagos)*
German: *Galápagos Seebar (or G. Pelzrobbe)*

SYSTEMATICS AND CLOSEST RELATIVES

The Galápagos fur seal is recognised as a separate species in the latest revision of the systematics of the southern fur seals (Repenning et al. 1971). Earlier investigators (King 1964, Scheffer 1958) had thought it a subspecies of the South American fur seal (*Arctocephalus australis*). But as Repenning et al. (1971) could show a reliable difference in the skulls of the South American fur seal and the Galapagos fur seal, it seems reasonable to consider the latter a species of its own.

FIELD IDENTIFICATION (see also Fig. 2)

The Galápagos fur seal is much smaller than the sea lion. Adult males have a conspicuously thick neck, but the forehead protrudes only slightly. Females are more slender and considerably smaller than the males. Both are easily distinguished from the sea lions by their larger eyes, shorter nose and completely different calls. The fur when dry appears dark brown and fluffy (or rarely, gold-brown or silver-grey). Wet animals look almost black. A fur seal's ears stick out far more obviously than a sea lion's. This is very useful in distinguishing between swimming fur

seals and sea lions. Fur seals have the habit of resting head down in the water with only the rear flippers visible. Fur seals jump easily from rock to rock, move faster and gallop much more than sea lions.

New born fur seals are far smaller (ca. 3.4 kg) than newborn sea lions (ca. 5 kg). Their fur is almost black at birth, sometimes with grey or white margins around the mouth and nose. The fur gradually lightens to a chocolate brown. During their fourth month they undergo a molt into the adult fur.

STATUS OF THE POPULATION

Extensive sealing during the end of the last and early in this century nearly exterminated the Galapagos fur seal. In the 1940s local fishermen already knew of the existence of great colonies on Pinta and Marchena (F. Angermayer, pers.comm.). Later, the species was also found to be widespread and abundant on Fernandina and northern Isabela. The present population is estimated at about 40,000 animals.

Resting fur seals can regularly be seen from the boat on Gordon Rocks (east of Plazas). The fur seal grottos near James Bay on Santiago provide the best opportunity for close range observation of this species.

Fur seals are less affected by the epizootic disease than sea lions. But adult males, having been seriously injured in territorial fighting and therefore open to infection, frequently die of it.

DISTRIBUTION WITHIN THE ISLANDS AND HABITAT

The densest and largest fur seal populations inhabit Isabela and Fernandina in the west, and Pinta, Marchena, Genovesa and Wolf in the north. Of the central islands of the archipelago, Santiago, Santa Cruz, Rábida, Seymour Norte, Baltra and Pinzón harbor fur seal populations, the order indicating decreasing population size. While very small breeding colonies may exist on Floreana and San Cristóbal, Española is visited only occasionally by stragglers, and no observations have been made on Santa Fe.

Fur seal habitat is often very rugged, so that the animals must jump and climb a lot. Shady resting places abound. Small caves, pockets in the lava, or holes between or below boulders are of vital thermoregulatory importance, especially for small pups, who often cannot enter the water near their birthplace without the risk of being washed out to sea.

Fur seal colonies are always close to deep water (200 fathoms or more). Local upwelling of colder water from the deep, besides having a beneficial effect on lowering ambient temperature, may be a necessary condition for the nourishment of a sizeable fur seal colony. Around Cerro Azul (Isabela), predation by introduced dogs seems to have brought about the confinement of breeding colonies to places cut off from land access by steep cliffs.

NATURAL HISTORY

The reproductive season of the fur seals lasts from August through November. In 1977 the birth peak on Fernandina was in the first week of October.

A female bears one pup, and stays with it until coming into oestrus and copulating with the territorial male, usually about a week after parturition. She then goes off to feed (usually at nights), returning to the pup every day or every other day. Mother-pup recognition functions essentially as described above for the sea lion.



Fur Seal

Photo: by Fritz Polking

If the mother has a one-year old juvenile, she usually abandons the newborn, at the latest after copulation. Aggression of the one-year-old grows against the newborn pup as it tries ever more desperately to get to the mother's teats. She defends it half-heartedly from these attacks, and very often the older pup succeeds in driving the other away, even before the mother comes into oestrus. In rare cases direct fratricide is observed.

Young Galapagos fur seals are dependent on the mother's care for about 2 years. If the mother gives birth again after this period, she usually drives off the 2-year old. But if she does not give birth again, she can be seen later on still nursing a 'baby' about as big as herself.

Pups play together in groups, first in little puddles and isolated pools, later also in calm open water. As with adults, pups are almost never found sleeping in body contact, quite unlike sea lions where both adults and pups love to sleep almost in a pile. During their second year of life juveniles begin to hunt for themselves, and become increasingly independent, nevertheless they still search out their mothers regularly, and drink for hours on end, when they meet her.

Males establish territories before the first females come into oestrus. They defend these territories for about 4-6 weeks without once going out to feed. They are usually ousted by a challenging male or leave when thoroughly exhausted. As the peak of the reproductive season approaches, the duration of such territory maintenance shortens to about 2 weeks.

More than 90% of the copulations take place on land. A territorial male initiates copulation by approaching females in oestrus and mounting. Females ready to copulate usually submit to him without much resistance; but when approached by a trespassing male, they defend themselves vigorously and almost always successfully. Such a fight is often interrupted by the approach of the territorial male, who chases off the trespasser and checks up on the female, sniffing her face.

Fur seals feed mostly during the night. Occasionally collected vomit samples showed that their diet is small fish and squids.

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