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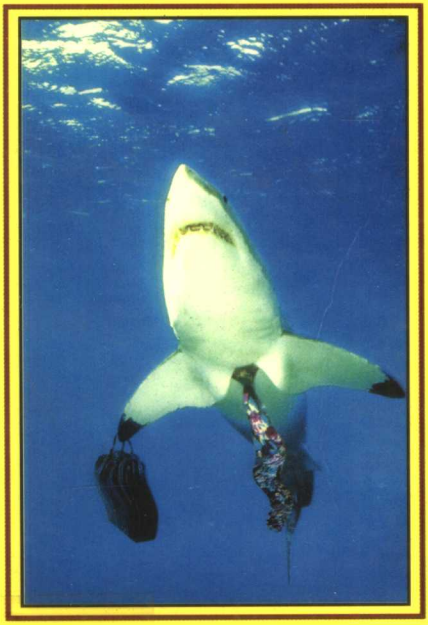
Essays of Popular Science



李彦文 谢力 编注

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丛书致读者

那天陪朋友逛“科技市场”，感觉到从未有过的累。

得跟您说明一下。这个科技市场是山东济南靠近山大南院的一个计算机商场。一座三层楼里面，汇集三百多家计算机商，经销整机，硬软件，耗材，配套设施，当然还有节目光盘。

说到那些节目光盘，我困惑得头大。都是些什么呀。我奶奶——愿她在地下安息——如果还活着，逢此盛世，肯定乐得再活几十年。七仙女，白娘子，老包，目连，说书的瞎子，算命的先生，都在。麻将和桥牌可能让她皱眉，三国游戏可能玩不来了；可是，金庸和琼瑶，韦小宝和小燕子，她一定喜闻乐见。

朋友曾怜悯我至今还用着十几年前的 286 和 WPS：“呵，很多享受你错过了。”But dear Grandmother，要是“享受”指的是这些，俺宁可回俺村去看俺的蚂蚁上树。

临出门，上高中的儿子对我说：“要是多媒体上能看欧几里德和牛顿讲数学，那咱就买一台。”

我问了。没那节目。有些商家连这些名字都没听说

过。“有孩子看的科技节目吗?”“有。”拿过一张盘,套封上列着“地球奥秘”,“人体奥秘”,什么什么,不用看就知道,小学三年级以下的孩子可能感兴趣。

那天是个“秋老虎”,预报说33度。可是,包围在那些媒体里面,我觉得怎么也有34度。除了一身一身的汗,没感到别的享受,也没看到什么科技。

所以,让我选择,还是看书,白纸黑字的书。最好是五块钱一本的,可看可不看的闲书(注意,这是广告)。花明柳媚时,梧桐秋雨时,长夏无聊时,没有功课也没有约会;当此时也,手执一卷,卧榻上,树荫里,安安静静,读上一叶两叶,三叶五叶,是一种心境,是一种活法儿——一种在闹市尘嚣电化声光威凌之下离我们越来越远的活法儿。

绍明

前　言

漫步在莱茗顿温泉花园，看白鸽觅食，天鹅嬉戏。

小松鼠蹲在枝桠上从容地左顾右盼。

白发老人坐在宽大的木椅上发呆。

金盏花、黄水仙、迷迭香。

人与自然，真地可以如此相安无事。

那一刻，不想提起前年此处被大雨漫灌的故事，不愿记得刚才下冰雹四散而逃的情景。

我们都希望人与自然，真地可以像此刻般和谐如一。

我们也希望这本小书，能获得你心底的共鸣。

编著者

2000 年 6 月于英格兰

目　录

Pretecting Miraculous Wildlife 保护神奇的野生世界

Seeking Harmonious Nature 寻求和谐的自然空间

Struggling to Stay Afloat[1]

In the calm water of a kelp[2] bed off California's rugged Big Sur coast[3], a sea otter[4] floats quietly on her back, her young pup[5] on her belly. A moment later, the mother rolls over, dumping the pup into the frigid water. Both swim a few yards, then float on their backs once again.

High above on the coastal bluffs[6], biologist Mike Kenner peers intently down through his binoculars[7]. As violet-green swallows and white-throated swifts[8] dart[9] about him in the spring sunshine, he watches the pup, then scans the kelp bed for other otters. Checking with his colleague Jud Vandevere, Kenner marks down his total: four otter females with pups, plus three solitary[10] adults.

This breathtaking vantage point[11] near Torre Canyon is just one of dozens the two men will visit today in their effort to tally[12] every sea otter on this stretch of coastline. Farther north and south, other researchers are doing the same as part of a twice-yearly otter count that has been going on since 1983. When all the numbers are in, the 1999 spring count tells a worrisome[13] tale—for the fourth year in a row, southern sea otter numbers have gone down. Scientists have been unable to pinpoint[14] the cause: Starvation, disease, pollution, drowning in fishing gear and even El Nino's[15] storms may all play roles, but none by itself seems enough to explain the problem.

"This decline is real, it is significant, and we do not have a simple understanding of why," says Dave Jessup, a senior wildlife veterinarian[16] with the California Department of Fish and Game.

It's ironic that the otters should have come to this point, be-

cause until a few years ago they stood as one of the success stories of marine conservation. By the early twentieth century, commercial hunters had almost wiped out the animals in pursuit of their dense pelts. Vandevere, a free-lance naturalist based in Monterey, California, who volunteers his time for the annual otter surveys, recalls being taught in the 1950s that the southern sea otter was extinct. But in fact, a few dozen did survive in isolated pockets along the California coast. (The northern subspecies[17] in Canada, Alaska and Russia never veered[18] so close to the brink.) And after otter hunting was banned in the early twentieth century, the population crept slowly upward again, though the creatures' numbers were still considered perilously[19] small.

Southern sea otters were listed as threatened under the Endangered Species Act in 1977, and once gill-net[20] fisheries—which can entangle[21] and drown the otters—were banned in shallow inshore waters in the early 1980s, their numbers boomed. (Northern sea otter numbers were never considered small enough to warrant federal listing.) By the mid-1990s, California's sea otters were doing so well that government biologists began to talk about when they ought to remove them from the threatened species list.

"It wasn't too long ago they were talking about what the number was where they were going to delist[22] them, but things have turned kinda sour[23] since then," says Kenner, a biologist at the University of California-Santa Cruz who has been studying otters for 15 years.

From a peak of nearly 2,400 animals in 1995, the southern sea otter count has slid steadily downward year by year—in normal years as well as the stormier El Nino years—until today there are barely 2,000 otters left. A bigger concern is that dead animals have been washing up on shore in unprecedented numbers—

more than 200 animals in 1998 alone.

"We picked up 10 percent of the population dead in 1998. That's not something that happens very often in a wildlife population," says Jessup.

Many of the dead southern otters looked like they were starving, which led some experts to wonder whether the animals were running out of the sea urchins[24], crustaceans[25] and other bottom-dwelling creatures[26] that form the bulk of their diet. The idea makes sense; Otters are ravenous[27] eaters, gulping[28] down as much as a quarter of their body weight every day. Visitors to the central California coast can often see—and hear—a nearby otter floating at the surface, cracking hard-shelled prey by pounding them on an "anvil"[29] rock balanced on its chest. Underwater, the otters are curious and insistent explorers as they poke around[30] the ocean floor in coastal areas and grab things with their agile hands. Keepers at the Monterey Bay Aquarium learned this to their chagrin[31] a few years ago when the four otters on exhibit there turned everything in their tank that wasn't bolted down—and even a few things that were—into toys. But when mealtime comes, each otter in the wild seems to return to its own two or three favorite foods out of the dozens that are available. One otter that lives near the aquarium eats mostly sea urchins and mussels[32]. Another prefers fat innkeeper worms it digs from the mud. A third dines on octopuses[33], while a fourth specializes in crabs and sea stars.

These dietary habits[34] seem to run in the family, because researchers commonly find the same quirky[35] tastes in both mother and pups. By specializing in a few favorite foods, each otter may become expert in the tricks of finding and opening those items. But sometimes, an otter's food choices leave biologists baffled[36]. One otter makes a habit of dining on turban snails[37], a labor-in-

tensive diet for such a big eater. "You wonder why an adult otter would choose to eat a couple thousand little turban snails instead of a couple of big crabs," says Andrew Johnson, who manages the aquarium's otter research and conservation program.

The otters' gargantuan[38] appetites are absolutely essential because, unlike other marine mammals, they have no blubber layer[39] to insulate their bodies from the cold ocean. Instead, they depend on a layer of air trapped[40] within their thick fur—with as many as one million hairs per square inch, the densest pelt[41] of any mammal. The otters' frequent grooming[42] keeps plenty of air bubbles trapped between the hair shafts[43], insulating them from the frigid world outside. "If their fur degrades and that cold water gets in next to their skin, they become just like you or me—we wouldn't last too long," says Johnson. "It's really important to their survival to maintain their fur in good condition." (This makes sea otters among the most vulnerable marine animals to oil spills, which slick down their fur and destroy its insulating properties.)

Even the many hours that otters spend simply floating each day may be crucial for conserving energy. Almost always, the animals float on their backs, with their paws—the one part of the body with very little insulating fur—high and dry. "People see otters lounging around[44] and bobbing[45] and they say, 'Oh, how cute.' But pretty much everything they do is related to survival," says Johnson. "It's not as joyous an existence as people think it is. These animals are really on the edge."

Despite their enormous appetites, though, Kenner says it's not clear that otters are dying of hunger. There is little evidence that the otters' prey species have dwindled[46] in recent years, and there are few signs that hungry otters are migrating up and down the coast in search of better food. Moreover, the wrong animals

seem to be dying. "If it was just a food limitation, you'd expect to see the very young and very old dying, but we see a lot of prime-aged animals[47]," says Kenner.

The starving animals may be the result, not the cause, of the problem, some scientists think. "It doesn't take too many days of being too sick to eat to get real skinny real fast," says Jessup. And indeed, when pathologists examined the recently dead animals, the biggest killer turned out to be disease, which accounted for 40 percent of all deaths. About half of the diseased animals were felled[48] by parasites[49], especially a spiny-headed worm[50] that normally passes from sand crabs into seabirds. If hunger drove more otters to eat sand crabs in recent years, Jessup figures, they may have picked up the parasite in greater numbers than before.

The other half of the diseased animals fell victim to an odd variety of problems: massive bacterial infections, a protozoan[51] called Toxoplasma[52] that infects the brain, and even the fungus[53] that causes valley fever, a respiratory disease[54] that affects humans in the Southwest. All three disease organisms are common, yet rarely cause problems in healthy animals. Instead, they tend to pop up when something weakens the immune system. "These three syndromes together suggest there may be something wrong with the immune system of sea otters," says Jessup. If so, one culprit[55] might be pollutants—especially tributyltin[56], the active ingredient in the paints that boat owners use to keep their hulls clear of barnacles[57] and algae[58], and chemicals such as PCBs[59] or DDT[60] residues. Sure enough, Kurunthachalam Kannan, a toxicologist[61] at Michigan State University, found higher levels of tributyltin in tissue samples taken from diseased otters than in samples taken from otters that died of other causes. However, these contaminants[62] seem unlikely to be the whole story—most

tributyltin contamination occurs near harbors, and dead otters have been common even on relatively unspoiled coastline. Fishing, too, may bear part of the blame for otter deaths. In the past few years, many fishermen have begun setting traps for rockfish[63] and other bottom-dwelling fish along the California coast. These traps—large mesh[64] cylinders with a small opening that's easy to get into but hard to get out of—might catch and drown curious otters attracted by the fish inside them, biologists think. The trap fishery is so new—and so unregulated—that fisheries biologists don't even know how many traps are in use, let alone how often otters get caught in them. To see whether curiosity is killing sea otters in the wild, the California Department of Fish and Game is sending observers out to watch fishermen pull up their traps.

Despite all these possible explanations for the sea otters' recent decline, conservationists[65] are still stumped[66] by what's going on and unsure what steps they can take to reverse the problem. Otters might, for example, be succumbing[67] to disease because their immune systems[68] have been weakened by toxics in urban sewage, agricultural runoff[69] or boat paints. But even if that's true—and it's still a big if—scientists may have to wait until they have better evidence before they call for expensive changes in water treatment or land use.

Most worrisome of all is the possibility that there may never be a single smoking gun[70]. "My sense is that it's a lot of little things ganging up[71]," says Johnson. "There are enough stresses on this population that if any of them increase slightly or there are any other pressures put on the population, we're going to see a decline."

If the otters are being nickeled and dimed toward extinction[72], conservationists will be hard-pressed to find a quick fix for

the problem. But a nickel-and-dime solution[73]—fewer fish traps here, slightly cleaner water there, a better year for the species they eat—might be enough to help the species turn the corner back toward prosperity. And on a coastline with many competing political interests, such a solution might be the most practical one of all.

★*Notes*:

1. 《在挣扎中漂浮》,选自美国《国家野生动物》杂志,作者鲍勃·霍姆斯(Bob Holmes)
2. kelp *n.* 海草,巨藻
3. California's rugged Big Sur coast 加利福尼亚崎岖不平的巨浪海岸
4. sea otter 海獭
5. pup *n.* 幼仔
6. bluff *n.* 悬崖,峭壁
7. binoculars *n.* 望远镜
8. swift *n.* 雨燕
9. dart *v.* 急冲;直冲
10. solitary *a.* 孤独的
11. this breathtaking vantage point 能观察到这种令人惊叹场面的有利位置
12. tally *v.* 清点(这里指看清楚每一只海獭)
13. worrisome *a.* 令人不安的;使人焦虑的
14. pinpoint *v.* 确认;查明
15. El Nino 厄尔尼诺现象
16. veterinarian *n.* 兽医
17. subspecies *n.* (生物的)亚种
18. veer *v.* 转向
19. perilously ad. 危险地
20. gill-net *n.* 刺网

21. entangle *v.* 套住，缠住，纠缠
22. delist *v.* 将...从(濒临灭绝的动物)名单中划去
23. but things have turned kinda sour 但是情况变得有些恶化；kinda (= kind of) 有一点，有几分；sour *a.* 变坏的，变得令人不愉快的
24. sea urchin *n.* 海胆
25. crustacean *n.* 甲壳类
26. bottom-dwelling creatures 生活在海底的生物
27. ravenous *a.* 狼吞虎咽的；食量大的
28. gulp *v.* 吞
29. anvil *n.* 砧骨
30. poke around 闲逛，闲荡
31. to one's chagrin 使某人懊恼的是
32. mussel *n.* 贻贝；蚌类
33. octopus *n.* 章鱼
34. dietary habits 饮食习惯
35. quirky *a.* 古怪的，奇怪的
36. baffled *a.* 困惑的
37. turban snail 蝾螺
38. gargan-uan *a.* 巨大的，庞大的
39. blubber layer 脂肪层
40. trap *v.* 集聚
41. pelt *n.* 毛皮
42. groom *v.* 梳理
43. hair shaft 毛干
44. lounge around 闲逛，闲荡
45. bob *v.* 上下来回浮动
46. dwindle *v.* 缩小
47. prime-aged animals 正当盛年的海豹
48. fell *v.* 致死
49. parasite *n.* 寄生虫

50. spiny-headed worm 棘头虫
51. protozoan *n.* 原生动物
52. Toxoplasma *n.* 弓浆虫
53. fungus *n.* 菌类
54. respiratory disease 呼吸疾病
55. culprit *n.* 罪犯
56. tributyltin *n.* (三)丁酸甘油酯,三丁精
57. barnacle *n.* 藤壶(附在岩石、船底上的甲壳动物)
58. alga *n.* 藻类,海藻(*pl.* algae)
59. PCBs (= polychorinated biphenyls) 多氯联二苯
60. DDT (= dichloro-diphenyl-trichloroethane) 二氯二苯三氯乙烷(一种接触性杀虫剂,俗称滴滴涕)
61. toxicologist *n.* 毒物学者;毒理学者
62. contaminant *n.* 污染物;contamination *n.* 污染
63. rockfish *n.* 岩鱼(各种栖于礁石中的鱼类);石斑鱼
64. mesh *n.* 网眼
65. conservationist *n.* 自然资源保护论者
66. stumped *a.* 困惑的
67. succumb *v.* 死;屈从
68. immune systems 免疫系统
69. agricultural runoff 农业排泄物
70. there may never be a single smoking gun 从来都不只是一种因素起作用
71. gang up 聚集,集合
72. being nickeled and dimed toward extinction 正在一点一点地走向灭绝;nickel *n.* (美国、加拿大)五分的镍币,dime *n.* (美国、加拿大)一角镍币(都是币值极小的钱,常借喻微不足道的东西)
73. a nickel-and-dime solution 一步一步的解决方案,分步逐点的方式