

Seals Under Siege: A Heated Warning

Seals have not found the past century a healthy one. Besides facing human predators, who have all but eliminated several regional populations, masses of the fin-footed creatures have succumbed to viral plagues. Most recently, in the summer of 1988, nearly 18,000 dead harbor seals washed up on European shores, victims of a distemper virus (SN: 9/3/88, p.149).

Scientists have speculated that the distemper-resistant harp seal acted as a sort of marine Typhoid Mary in the 1988 outbreak, moving south into the harbor seal's range and passing along the virus. Some blame chemical pollutants known to disarm seal immune systems.

Two biologists now suggest, however, that investigators have overlooked an underlying factor that could explain five of the century's most conspicuous seal die-offs, including the 1988 deaths. Unusually warm weather and crowded seal herds combined to trigger the outbreaks, they propose.

David M. Lavigne of the University of Guelph, Ontario, and Oswald J. Schmitz of the University of British Columbia in Vancouver examined records of regional air temperatures preceding five major seal die-offs. "In each case, the mass mortalities began following three months when mean air temperatures were 1°C to 3°C higher than the preceding 10-year average," they write in the recently released June MARINE POLLUTION BULLETIN.

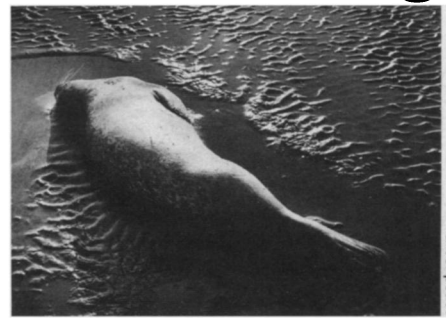
The researchers suggest that as temperatures rise, seals begin hauling out of the water and gathering in unusually dense herds on shore. If a contagious virus is present it may spread rapidly, like measles racing through a crowded classroom. Lavigne and Schmitz cite a 1973 study showing that a 2°C rise in air temperature coincided with harbor seals hauling out by the hundreds. "What is important is that the local [seal] densities on shore were much higher than densities preceding the [outbreaks]," Lavigne says.

"The act of hauling out does indeed make seals more vulnerable," says John Harwood, head of the Sea Mammal Research Unit in Cambridge, England. "But the problem with this hypothesis is that we really don't know why they haul out. It's unreasonable to think that seals haul out just because the air temperature has gotten warmer." Although Harwood agrees that higher temperatures might in some cases contribute to seal plagues, "its very hard to believe that [temperature] is the sole factor," he says.

Lavigne and Schmitz acknowledge that the hauling out behavior remains poorly understood. Nonetheless, they say, "four of the six documented mass mortalities

in seal populations have occurred in the past 12 years, a period which includes some of the warmest years in the 20th century." Moreover, they suggest warmer weather may have done in other marine creatures. Recent die-offs of dolphins and whales also followed unseasonably warm temperatures, they point out.

Predictions of global temperatures rising by as much as 3°C within the next century (SN: 6/23/90, p.391) carry "profound implications for the future [of pinniped populations]," Lavigne and Schmitz write. "Our data show that a 1°C to 3°C increase in average temperature can trigger very significant ecological events," Lavigne told SCIENCE NEWS. Noting a recent rash of die-offs among seabirds, fish, coral reefs and sea turtles,



One of nearly 18,000 casualties of 1988 distemper plague.

he adds, "If the record of the past 12 years is anything to go by, we probably have much more to worry about than seal deaths." — W. Stolzenburg

Sweet tooth, rotten kid: A theory gone sour

A new study disputes the notion that overindulgence in sweets predisposes a child to a life of disruptive behavior.

Seeking a link between sugar intake and behavior, researchers compared the consequences of eating either sugar or an artificial sweetener in high school students and juvenile delinquents. Surprisingly, their findings hint that for some delinquents a spoonful of sugar may actually improve behavior.

A substantial body of anecdotal evidence has suggested a causal link between antisocial behavior and heavy consumption of sugary foods. In one of the best-known examples, San Francisco killer Dan White blamed chronic overconsumption of Hostess Twinkies for the loss of judgment that in 1978 led him to gun down the city's mayor, George Moscone, and City Supervisor Harvey Milk. Some correctional facilities have removed their snack machines and de-sweetened their menus in an attempt to minimize behaviors associated with criminality, such as hyperactivity. Yet few well-controlled experiments have directly assessed the purported ties between sugar intake and behavior, and none has proved a link.

Now, in the August PEDIATRICS, researchers at the University of Wisconsin-Madison report results from the first study comparing the effects of different sweeteners on criminally delinquent and nondelinquent male adolescents.

Jo-Anne Bachorowski (now at the University of Colorado at Denver), Dian A. Gans (now at the University of Hawaii-Manoa), Joseph P. Newman and their colleagues administered neuropsychological tasks to 115 delinquents and 39 nondelinquents after giving them breakfasts

sweetened with either sucrose or the artificial sweetener aspartame. The tests measured motor endurance, coordination, concentration, short-term memory and hyperactivity. The researchers also rated each individual for 32 mood and behavior variables and administered tests measuring cognitive function and behavioral disturbance. Each individual went through two rounds of testing—one for each kind of breakfast.

The results provide "no support for the contention that sucrose ingestion compromises behavior" among delinquents or nondelinquents, the researchers report. And contrary to popular lore, the most hyperactive, destructive and behaviorally disturbed delinquents "demonstrated better performance after the sucrose than after the no-sucrose breakfast," they say.

The team also tested the controversial claim that aggressive, antisocial behavior can result from a metabolic abnormality called reactive hypoglycemia—a short-term overreaction to sugar consumption, temporarily lowering blood glucose levels.

Oral sucrose-tolerance tests given to 137 delinquent and 41 nondelinquent teenagers show no greater incidence of reactive hypoglycemia among delinquents than among nondelinquents, the researchers report. But the tests do reveal significant differences in the rates at which the two groups metabolize sugar, Newman told SCIENCE NEWS. Citing these findings and unpublished research, Newman proposes that some delinquents suffer from inadequate regulation of blood sugar levels and may benefit from somewhat higher amounts of ingested sugar. He makes the unorthodox sugges-