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My name is Kent Bonar and my address is HC 62 Box 656 Deer, AR. I'm a naturalist for the Newton County Wildlife Association. And I object specifically to the flares. The flares are a threat to any wildlife that's flying night or day. As their explained, they're run off of pressure and can come on or off at any given time. So it's hard to predict when the flares would be actually operating. And wildlife, whether it's migrating birds, migrating bats, insects, which those forms of wildlife need for food, all of that stuff is subject to an open flare. And under certain conditions, especially under fog, which Big Creek gets a lot of fog, you get diffuse lighting conditions where birds, bats can't see where they're flying. And you'll get a situation similar to a tower kill, where the birds will be flying around in this ambient light in the fog. They can't see where they're going and it'll be like the tower kills I've had to work since the 70s or like the blackbird kill down in Little Rock a couple of years ago, where the birds just fly into each other. They fly into buildings and obstacles. They fly into trees. They fly into the flare itself. And so it's an unacceptable threat to the wildlife in general. And unless they had the flare entirely covered to where it doesn't shed light, then it's going to be attracting those birds. The compound itself is probably well light enough that it's would be attracting them in any case and the flare would be the thing to finish them off. So it's like I say, an unacceptable threat to wildlife and especially endangered species. And the Fish and Wildlife Service should have something to say about it. That's all I've got.

Kent Bonar

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The following comments are on the C&H proposed modification to install a liner, cover and flare over slurry ponds.

First, its a waste of potential fuel to flare off anything. It may raise the price of all fuels temporarily but would be better in the long run used as produced. The hog farm should have prepurized methane storage and regular pickups by a gas company, with consumer prices competitively lower to encourage steady use, since theres too much invested in any CAFO to sit idle until abandoned. Natural gas wells should also not be flared but capped for future use. Waste not,... .

The claim that the flare converts methane to Carbon overlooks the fact that it depletes oxygen to burn anything. The methane should be broken down chemically if not used. Put to proper use, the methane could be worth more than the hogs which produce it. In fact, since C&H is faced with increased costs of hauling slurry, they should convert their own vehicles to run on methane.

The recent landslides following fracking in counties to the south and especially east show a pattern crossing Newton county (Falling Water Creek, Mt. Judea, Roundtop above Jasper, Low Gap, Compton) Seismic testing on US Forest Service land to the south might also contribute to geologic instability. I remember an earthquake in the 80s that was centered in Mt. Judea — I felt the ground shake on a bluff above Parthenon. The liner probably can't withstand a crack or shift in the underlying rock, especially with the weight of the slurry.

The risk of a fire or explosion should be considered. The flare would be an ignition source for any leakage. A pond explosion would likely ignite the entire compound, and injure or kill any workers there at the time. It could also rupture water lines, cause a power outage, and injure rescuers.

The flare is a threat to much of the biota in the county by steadily reducing insect populations on which many vertebrates depend for food, plants for pollination. Legumes in hay (red, white, crimson, sweet and hop clovers, lespedeza, alfalfa, vetch, cowpeas) are the most efficent at processing nitrogen but need pollinators. Beekeepers like Mrs. Henry at Hasty would'nt want hives near a flare.

By spring, nuts, berrys, acorns, and fruits are gone. Squirrels eat elm buds, then maple. Birds forage desperately until leafout — when insects emerge, in time for spring migration. Whip-poor-wills in the '70s always got to Newton county on the third week of April in Limestone and Walnut valleys. Now they're on the first. (1st or 2nd)

Whip-poor-wills and chuck-wills-widows both hunt low over fields or treetops at night, as do some owls. Chuck-wills-widows predominate in bottoms, whip-poor-wills on top, but with overlap. However the whip-poor-wills are a week or two earlier than chucks, and insects and plants are both out earlier in bottoms so all of them would be moving in the valley down Big Creek to the Buffalo.

The flare represents a real threat to most songbirds. Whip-poor-wills and owls have good night vision and can see the flare, but may not understand it and try to fly over it — and get scorched. Most migrating songbirds aren't so lucky. Flying at night just above treetops. They can see by full or near-full moon on a clear night. On a new moon or overcast sky their eyes, like ours, ajust to low levels of ambient light. But also like us, when shined in the face with a bright light, temporary blindness results.

On a clear night, birds can see a light on a tall structure far enough away to avoid it. But on a dark night or especially in fog (which is often in Big Creek valley as seen from highway 7) lights blur. Ambient light or moonlight create a general glow reflected into the fog which masks the nature and intensity of a bright light source, such as the flare or tower lights.

When I was a teaching assistant in field and lab ornithology at the University of Missouri-Columbia, I've spent all day and half the night skinning freshly-killed songbirds from one nights' kill on a radio tower — we were getting pickup loads; so we only skinned birds we needed for our collections and injected the rest with formaldehyde for the teaching collection.

The lights alone can confuse birds when disoriented, as in the blackbirds in central Arkansas flying over a brightly-lit town until they collided enough to rain blackbirds. The glow from the flare in fog would mask the flare itself, so birds would start circling the brightest light until they collided, were scorched over or in front of the flare or sucked in by the air currents created by the oxygen demand.

Holla Bend National Wildlife Refuge is a focal point of migration for the Mississippi Flyway (largest in North America). The Ouachita Mountain ridges and valleys swirl to the northeast and funnel songbirds there while waterfowl and other water birds moving up or down river stop to feed, rest up and stage into flocks to move north. Big Creeks' headwaters take in a wide east-west span and funnel migrants from both forks right to the C&H compound. Beyond it is a straight corridor to the bridges and north to the Buffalo.

Opposite of C&H across Big Creek is Mt. Judea which is mostly cleared east to Dry Branch. Together they create a bottleneck on the valley for all flying animals. Big Creek itself bends toward Mt Judea and back away from the C&H compound; inviting flight right over the flare, especially for fall migrants coming off the Buffalo.

Bats also migrate but not so far for most species. Hoary Bats migrate to Mexico, but most move from summer foraging range (may or not be same breeding range) to winter hibernation caves. In Newton county, gray bats forage in spring around a maternity cave on Big Creek headwaters foraging from Fort Douglas to the Buffalo. on or near water hunting aquatic insects. By July, young bats are flying and the food shifts to soft-bodied beetles. (lightning bugs)

Gray bats sleep in caves year round. By mid-July they're out of the headwaters caves and Indianas start moving in for fall breeding. Some hibernate there, but most move down to the river, then up to Erbie. The gray bats move upriver to Baxley where they hibernate.

Gray bats have their wing membranes attached to their legs above their ankles (most attach at the base of the toes). That is for trawling — skimming the surface of water for aquatic emergents at the soft imago stage. At first, imagos are too soft to fly so they float on the surface until they harden, or gray bats scoop them up. We've watched them trawl inside the cave, using a nightscope.

We've seen Ozark Big-eared Bats in the Big Creek caves. I observed them for years at Devil's Den State Park — they're unmistakeable. The Big Piney Ranger District did a bat survey recently to see if there was any Indiana bat habitat in planned project areas. They used a bat detecter to find places to set up nets, then setup nets 12' off the ground (volleyball height) or just over water. Netting over water caught several species in small numbers. The dry sites catches were mostly northern long-eared bats. Long-eared bats fly low, a few feet above ground in mature forest. They hunt beetles which can't hear, so they are noisy to dodge tree trunks. Indianas hunt Noctuid moths, which have excellent hearing, high in the canopy. So they're quiet and hunt using low levels of ambient light filtering through the canopy. They're built for slow flight and tight maneuvers and can glean. I've seen them glean off cracks in rock over a cave entrance and once off the gate over the cave. (Stone county - Roland Cope)

So the district biologist found no Indianas in long-eared habitat. Using null hypothesis (if I can't find it, it isn't there) he concluded there were no Indianas to interfere with plans. He didn't know that long-eared were about to be listed. Habitat is disappearing, and their noisy calls are all in low F. M. range, where there's increasing clutter from radio stations.

Eastern small-footed bats are mostly in small family groups at high elevation in the summer. In the daytime they roost under big flat slab rocks. They're one of the smallest Ozark bats, but one of the toughest and hardiest — the last bats to go into hibernation. In summer, a family will start foraging over a pond or pool about sunset — or even earlier in shadows, and hunt there for an hour or so until the pond cools and insects quit flying. Then they hunt interior gaps in the forest or rest for the rest of the night.

The other small Ozark bat, the tri-colored bat (used to be called pipistrelles after a similar European bat) is found singly or in small groups in most Ozark caves. They fly fast and hunt in the open and over water. Big brown bats are commonly found in old buildings and just inside cave entrances. They are more adaptable and opportunistic at foraging than most bats. Little browns are edge specialists, but most are north of the Ozarks in summer.

When it is warm enough to fly but colder than optimal, insects will be attracted by the warm air on the edge of the flare heat. The concentration of insects will be echolocated by bats which can't sense the heat until they fly through the swarm and get scorched.

Most bats in the Ozarks are slow fliers compared to birds. I've seen (with a nightscope) a screech owl catch a gray bat (one of the faster species) easily and had other friends observe a family of barn owls catching bats easily when they were flushed into the open by loud music. Because they're such easy prey in the open, most bats stay near cover.

I watched a family of silver-haired bats through a summer. At dusk they'd emerge from a cedar grove into one end of a long field. Directly across a short open stretch was the pond they were going to but they'd fly all of the way around the edge of the field to get there, staying near cover.

A few bat species are built for fast open flight, and can dodge many predators. I've seen a female Hoary Bat catching Comet Darner dragonflies in early afternoon on Midsummer day (solstice) in Manitoba. 25% of hoary bats' food was dragonflies.

Two longtime wildlife association members, on seperate float trips on the Buffalo this year, at the hole above Carver saw a red bat high in the air hawking insects of some kind. One of them saw a crow chasing after the bat (or the same insects) then return to the same perch it had left.

The likeliest insects were glider dragonflies — wandering or spot-winged. Both species feed on aerial plankton and move in large swarms that can stay airborne for weeks over open ocean. Hoary and red bats can travel with a swarm for days, which is probably how hoary bats got to Hawaii and the Orkney Islands north of Scotland.

We've seen glider swarms across southern Newton county — including in fields below the cave on Big Creek. They come down to mate in fresh rainpools and blanket the vegetation where they land. (in that instance, right where young gray bats were about to forage. Perfectly timed for the bats) As the insect equivalent of passenger pigeons or buffalo, swarms move across the landscape and provide an abundance of food for bats and birds as they go.

Large still holes on the river or caves can build up plankton which become airborne on shallow riffles or waterfalls. These sources of airborne plankton would attract the swarms consistantly. But moving from the river to the cave would take a swarm right over the flare, and wipe out a regional food source for predators including bats.

Indiana bats depend on a later swarm — of Noctuid moths. When their maternity colony in the corn belt migrates back to Big Creek in early August, bats are at their yearly lowest weight.

Returning Indiana bats have to first breed (which takes considerable energy) move to another cave across the county (some stay) and put on enough fat for hibernation — all before a hard freeze. A few females spend the day in the cave, but most roost under bark (live hickory or white ash, or dead ash) in gaps of ridges, where their prey is.

Their main fall prey is Noctuid moths, especially underwings (genus Catocala). Three seperate groups of moths have developed hearing, with ears located on different parts of their bodys. Moths don't communicate with each other by sound, so hearing is a defense against bats. Location of ears on their bodys tell which bats they fear most.

Hawkmoths (Sphinx) fly fast, far, and in the open. Their ears are on their head, to avoid flying into hoary or red bats.

Geometrids (Inchworms) and Arctuids (Tiger Moths) have ears on their lateral abdomen. When the wings are down on a wingbeat, hearing is below and behind. Wings up exposes ears to lateral sound. Both fly high and slow in the open — foraging bats overtake them. Geometrids take evasive action when they hear a bat — stalling into a drop, diving or weaving. Arctuids are borderline toxic and bitter tasting. But to speed up the learning process for bats with minimal losses, Arctuids make loud clicks that are easily heard by the bats; so any experienced bat will avoid them.

Noctuids (cutworms, owlet moths) are the food of choice for Indiana bats in late summer and fall. Some noctuids are out in spring and early summer (dominant genus Zale) but most are later (dominant genus Catocala — underwings) Their ears are on their back (dorsal thorax) to deal with a dual threat. In daytime they rest on the shady side of big tree trunks. Then blue jays are their most serious predator.

There are over a hundred species of underwings in the eastern U.S. and Canada. Each species feeds on a certain species or family of trees or shrubs — only a few are generalists. Each moth species develops at its own pace, with a population peaking sequentually. In late summer, adults of most species start to form large breeding swarms. Many species eat riperian or bottomland trees, so the swarms start low and move up in a behavior pattern called hilltopping. At the top of a ridge, the swarm (joined by uphill species) rests in daytime on the shady side of big tree trunks in gaps or saddles of the ridges. Several moths of different species rest on the same tree. All have camoflage patterns on the top wings, but some are light, some dark some with bold patterns, others dull. Thus on any tree some are concealed while others stand out. If a jay or other bird attacks one of the standouts a concealed moth will pop out of nowhere and flash a bright hindwing pattern — either a bold shiny black or brown or else a red and black or yellow, orange or white and black pattern like an owls' face. This flashing predator face startles the jay just long enough for the other moths to flash as they escape.

At dark the swarm flies up to the top knobs on the ridge where each specier mates in the canopy or canopy gaps. After mating, females top over the ridge and drop into a hollow other than the one she came from to lay her eggs on her host tree. This ensures genetic diversity within the species but means that a population sink like the flare will deplete the surrounding landscape as well as the valley it's in, which increasingly reduces the bats food. Timing varys from year to year as to impacts (less on full moon, more on new) but some species will disappear, others will be drastically reduced.

Bats can emerge from hibernation and forage in warm spells in winter. Although some recent "experts" would try to use this behavior as a symptom of white-nosed fungi, Indianas were observed flying in daytime in winter back in the 1950's in Kentucky, with no losses in nearby caves. An early hard freeze can catch bats unprepared for hibernation and foraging gets critical.

Insects in winter will only be out when it's warm enough— daytime, mostly afternoons to just after dark. But many noctuids overwinter, and brushfoot butterflies (Mourning Cloak, Commas, Red Admiral, etc.) are active all winter and well into spring on warm days. Mourning Cloaks especially fly much like Noctuids working canopy gaps and circling dead snags.

The charts with the bibliography show the year and dates I drew each species of Catocala and Zale (not easy live and in situ) which approximates dates of peak occurence or shows limits for the rest of the year. As can be seen, there are few circadian gaps — some species are populous enough at any given time in late summer or fall to make a functional swarm, and many species persist past their peak.

This is just food for one endangered bat species, but shows how diversity of biota creates stability. We need to protect all of Creation for our own good, and realize that were part of it. Some places should be left as found and the hog factory is in the wrong place. Don't compound the error.

Sincerely

Kent Bonar
naturalist
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Wildlife Association

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genera	Zale	May	June	July	August	September	October
	aeruginosa ?						
	galbanata		SOFT MAPLE		2 1		
	horrida	VIBURNUM			1		
	lunata				cherry maple willow		
	lunifera	cherry					
	minerea	beech maple birch	cottonwood	1			
	undularis		black locust		2		
	unilineata	black locust					
	Euparthenos		1				
	nubilis			1			
	Ispanitherica						
	Celerio			1		4 5	
	Eacles			1			
	Polyphemus			99			

Numbers refer to years I drew that species well enough for positive identification
I'm still working on a few obscure ones, and expect to add a few more to this list.
Most locations were in Newton County, or adjacent townships of Johnson, Madison or Carroll Counties.

These are minimal time frames to compare to New England data (dotted lines) (for Zale)

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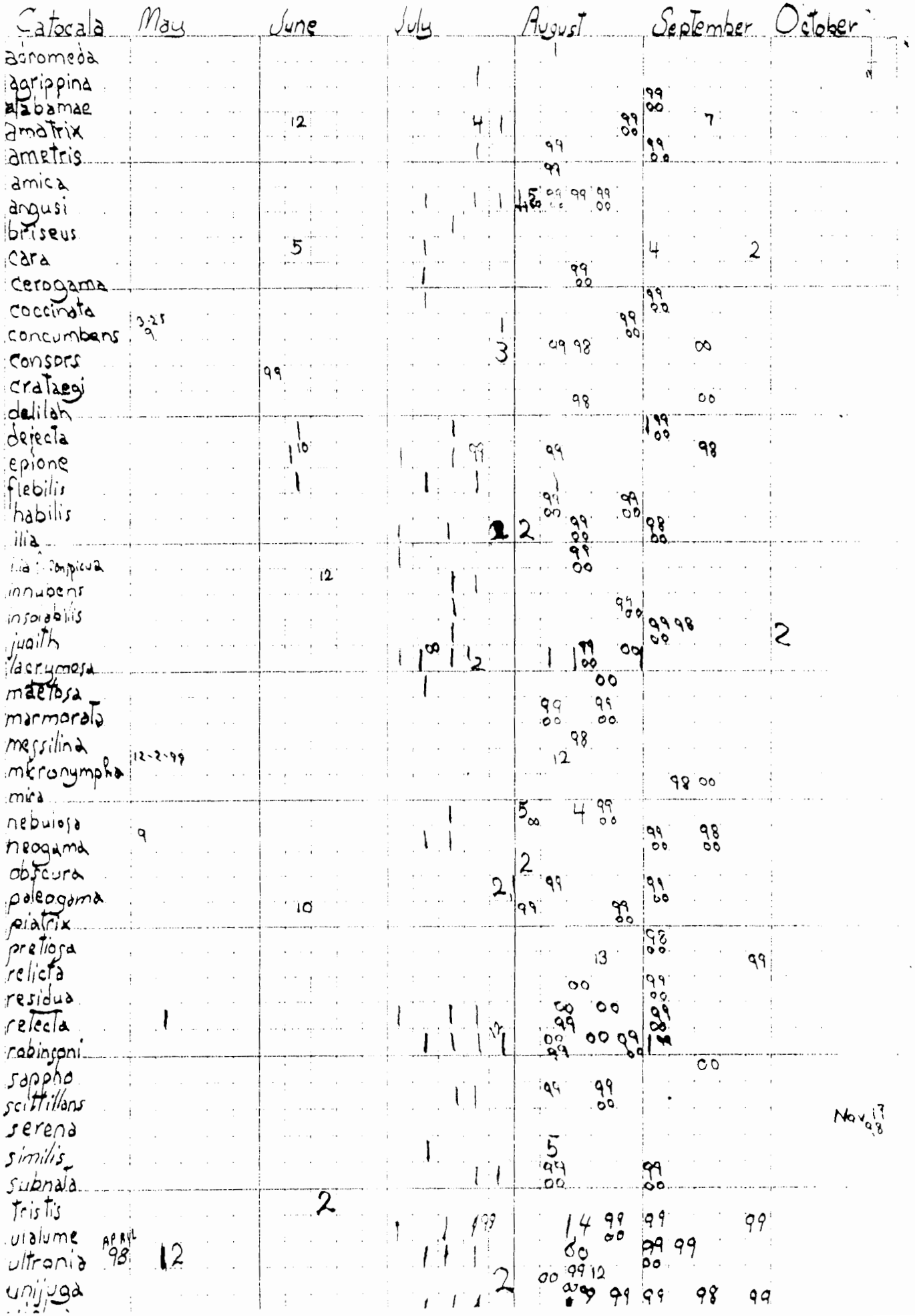
Catocala
May
June
July
August
September
October
adromeda
agrippina
alabamae
amatrix
ametris
amica
angusi
biriseus
cara
cerogama
coccinata
concumbens
consors
crataegi
delilah
dejecta
epione
flebilis
habilis
illia
innubens
insolabilis
juaith
lacrymosa
maestosa
marmorata
messilina
micronympha
mira
nebulosa
neogama
obscura
paleogama
patrix
pretiosa
relicta
residua
retecta
robinsoni
sappho
scintillans
serena
similis
subnata
tristis
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