



Irkutsk

Listvyanka

Tankhoy

Ulan-Ude



mazda

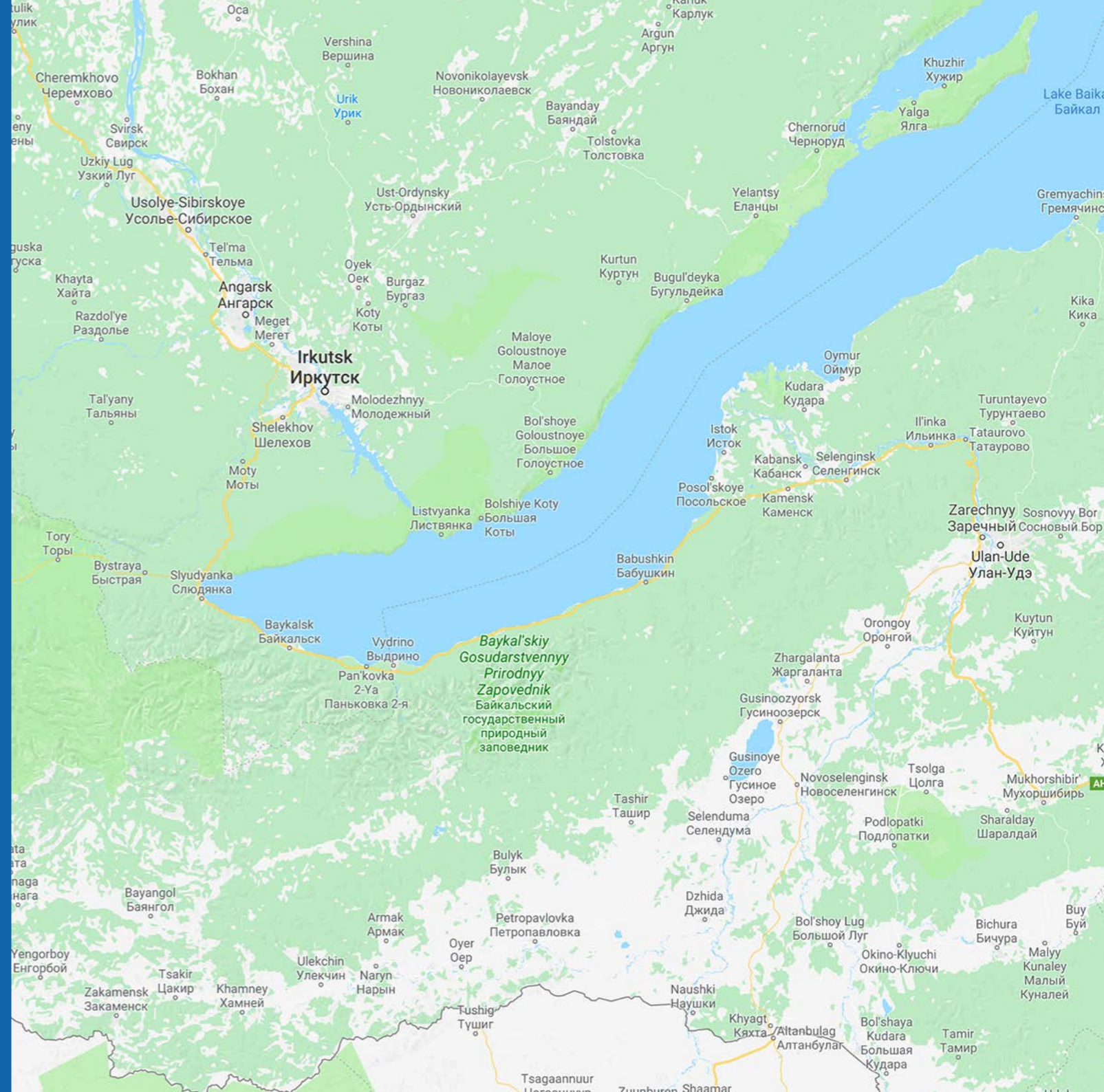
WELCOME TO EASTERN SIBERIA

ALL-NEW MAZDA CX-5: LAKE BAIKAL CROSSING

Welcome to Eastern Siberia. Ahead of you lies a unique opportunity to drive 24 miles from shore to shore across the frozen surface the world's largest body of freshwater, Lake Baikal.

Fitted with Mazda's intelligent new-generation all-wheel drive system and equipped with studded tyres to maximise grip on ice, the all-new Mazda CX-5 is ideally equipped to tackle this once-in-a-lifetime journey.

WELCOME TO EASTERN SIBERIA



ALL-NEW MAZDA CX-5

Launched in 2012, the original CX-5 set new dynamic standards, changing perceptions of how engaging a compact SUV could be. With its excellent body control, accurate steering and sharp handling the CX-5 was praised by media and customers alike.

Taking this strong base as the starting point, and with a chassis that has more than 50% new components, the development of the all-new Mazda CX-5 has seen Mazda's engineers work to deliver an SUV that takes the Jinba Ittai car-and-driver-as-one design and engineering philosophy to the next level.

Enhancements to the responsiveness and controllability of the all-new CX-5's SKYACTIV-BODY and SKYACTIV-CHASSIS ensure a feeling of complete command over the vehicle. Complimented by the introduction of G-Vectoring Control (GVC), the first of Mazda's SKYACTIV-VEHICLE DYNAMIC technologies, the all-new Mazda CX-5 is more comfortable, refined and responsive than ever.

Underpinning all these improvements, the all-new CX-5's SKYACTIV-BODY achieves high levels of performance in three key areas: collision safety, light body weight and rigidity. The overall result of these measures is an increase in bodysell torsional rigidity of 15 % over that of the previous model - this reduces the body's response delay to steering inputs.

Increasing the amount of ultra-high-tensile steel used by approximately 3% over the previous model also helps realise significant gains in body strength. The side sills and B pillars use ultra-high-tensile steel for the first time, enhancing safety performance and minimising weight increase.

Building on the rigidity of the all-new CX-5's shell the steering, suspension and brake systems have all been refined to enhance the handling stability the Mazda is already known for. To improve the response of the electric power steering system to driver inputs, rigid couplings provide a more direct connection between the steering system mountings and suspension cross-members.





While it inherits the proven MacPherson strut front and multi-link rear suspension systems of its predecessor, numerous fine-tuning measures have been implemented to further refine the all-new Mazda CX-5's SKYACTIV-CHASSIS. The diameter of the front damper pistons has been increased to provide a more linear response and smoother vehicle behaviour when quickly turning the steering wheel.

Optimising the damping characteristics also delivers smoother roll characteristics when entering corners, and a more stable posture during cornering. In addition, the front lower suspension arms now feature liquid-filled bushings which increase the damping of minute vibrations.

Complimenting these mechanical enhancements is the introduction of G-Vectoring Control (GVC). Integrating control of the engine, transmission and chassis, GVC varies engine torque to optimise the load on the front axle. When entering a corner under power, GVC momentarily reduces the amount of torque delivered to the front wheels, thereby transferring a fraction more weight onto the front axle. This increases front tyre grip, which allows the front wheels to turn more precisely.

Thereafter, when the driver maintains a constant steering angle, GVC immediately recovers engine drive torque, which transfers load to the rear wheels, enhancing vehicle stability. This series of load transfers extracts much more grip from both front and rear tyres, improving vehicle responsiveness and stability according to the driver's intentions.

Working to compliment the mechanical grip of the all-new CX-5, GVC is an unfelt companion that constantly helps the driver feel at one with the car -something that is at the very heart of Mazda's Jinba Ittai driver-and-car-as-one ethos.

However, it isn't just dynamic improvements that mark out the all-new Mazda CX-5. Refinement enhancements and the reduction of road noise were also key targets of the development team. To that end, a particular focus has been paid to the minimisation of vibrations from the tyres, suspension and body and the painstaking reduction of low frequency road noise, and high frequency wind and tyre noise when driving at speed.

Sharper and better to drive than ever, with greatly improved refinement, the all-new Mazda CX-5 is set to cement this vehicle's reputation as one of the SUV segment's most enjoyable driver's cars.

INTELLIGENT ALL-WHEEL DRIVE

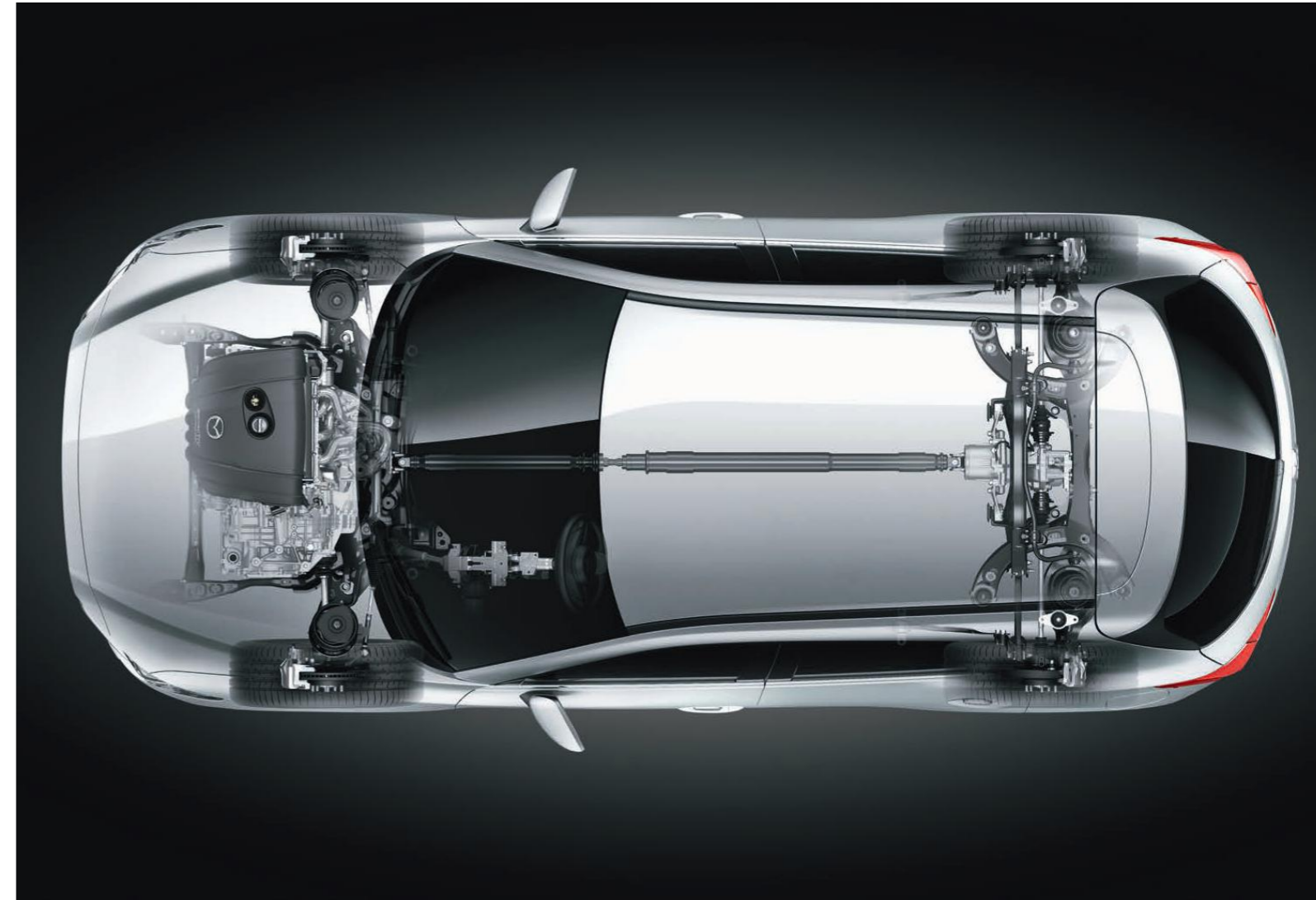
Mazda's new-generation intelligent all-wheel drive has been developed to maintain the connection between driver and road in all circumstances and conditions. Staying true to the spirit of Jinba Ittai regardless of grip levels, whilst at the same time ensuring there's no sacrifice in fuel efficiency, it has been significantly improved by the adoption of ball bearings for all its power take-off and rear differential unit bearings.

This is the first Mazda car to also feature tandem ball bearings in locations where a high level of rigidity is required under heavy load. The load-bearing rotation of the balls within the bearings has resulted in a dramatic reduction in resistance of some 30% compared to the previous system, and a commensurate 2% improvement in real-world fuel economy.

Mazda's intelligent AWD system uses 27 sensor signals to monitor road conditions and driver intentions, such as outside temperature, windscreen wiper activation, road gradient, steering angle and throttle application, instantly determining how power should be split between the front and rear wheels. The Active Torque Control coupling sends the right amount of torque to the right place at exactly the right time, maximising front and rear grip by precisely calculating how much grip is required at each wheel, even when road conditions are constantly changing.

While some lesser systems wait for individual wheels to lose grip before adjusting torque split, Mazda's intelligent AWD anticipates and instantaneously diverts drive to the rear-wheels ahead of front wheel slip. This intuitive set-up also delivers superb fuel efficiency by ensuring that the all-new CX-5 doesn't unnecessarily transmit torque to the rear wheels when conditions don't demand it.

With a focus on fuel efficient front-wheel drive, under most normal driving conditions torque split to the rear wheels can vary from as little as 1% to 50%. Designed to deliver grip, handling agility, driver confidence and fuel efficiency, Mazda's new-generation i-ACTIV AWD system works perfectly in conjunction with winter tyres in extreme snow and ice environments.







This gluttonous crustacean is one of over 1700 plant and animal species endemic to Lake Baikal and its surrounds. At the top of the aquatic food chain lolls the Baikal Seal, *Pusa Sibirica*. Known locally as the Nerpa, the earless Baikal seal is the world's only species of exclusively freshwater pinniped.

It remains something of a mystery as to how the seals came to inhabit Lake Baikal some two million years ago. Nerpas have two litres of blood more than other seals, enabling them to hold their breath for up to 70 minutes and dive to depths of up to 400 metres. The Baikal seal can live for an exceptionally long time -over 50 years- which must be terribly tedious.

Feeding almost exclusively at night, they use their vibrissae (whiskers to you and I) to locate their main source of food, the fish golomyanka. Another oddity exclusive to the lake, the translucent, scaleless golomyanka is such a fatty fish (with up to 40% of its body composed of oil) that it can adapt to the massive pressure differentials inherent in both surface and deep water dwelling. Indeed, so fatty is it that a golomyanka left out of water in the sunlight will melt, leaving only a skeleton in a puddle of oil.

Marginally more appetising is the omul, an endemic whitefish which is netted in vast quantities and then boiled, fried, smoked or - considered especially tasty - freshly salted. Alas, the total biomass of omul in Baikal has more than halved from 25 million to just 10 million tons in the last 15 years. And this, considering the region boasts no farming to speak of and the omul has been the main local source of food for centuries, is a problem.

The government has recently introduced a ban on all commercial fishing of omul, but still finds itself increasingly hard pressed to deal with the burgeoning frailty of the lake's ecosystem, which is now in serious jeopardy due to wastewater runoff from towns without proper sewage treatment.

The rapid disappearance of the omul, the death of sponges and the rapid growth of putrid algae do not presage well for the future of this glorious UNESCO World heritage Site.



For almost five months of the year Lake Baikal is covered in ice. Bizarrely, however, the freeze only takes hold with any severity in the middle of winter -January- long after winter has the rest of Siberia firmly in its icy grip.

The small range of temperature change in such a huge mass of water, combined with a surface area large enough to host storms boasting waves four to five metres high, dictates that ice development doesn't peak until early March when, having increased by anything from 50 to 200mm a day, it can achieve a thickness of between one and half to two metres.

Deep, inky blue, randomly peppered with fracture lines and myriad bubbles of trapped air, the ice can be as smooth and clear as a freshly polished window where brutal winds have blown the snow from the surface. It can also assemble itself into an altogether more impassable landscape of giant overlapping slabs and huge, crystal-like blocks up to 12 metres in height.

Occasionally, crevices will open in the ice with a sharp, thunderous crack. Anything between 10 and 30 kilometres in length, they can open to a width of some three metres; happily, given the mass of the floes involved, not at speed sufficient to trouble the passing motorist.



IRKUTSK TO ULAN-UDE VIA LISTVYANKA

Those perplexed by the utterly uncharacteristic straightness and smoothness of the 40 mile road linking Irkutsk to Listvyanka on the shores of Lake Baikal might be forgiven for suspecting the natives of the former of having had a whip-round at some stage to enable them to get as far away from their gently unlovely city as fast as possible.

But the truth behind the creation of the only respectable stretch of carriageway in the region actually constitutes one of the less lethal tales to come out of the cold war.

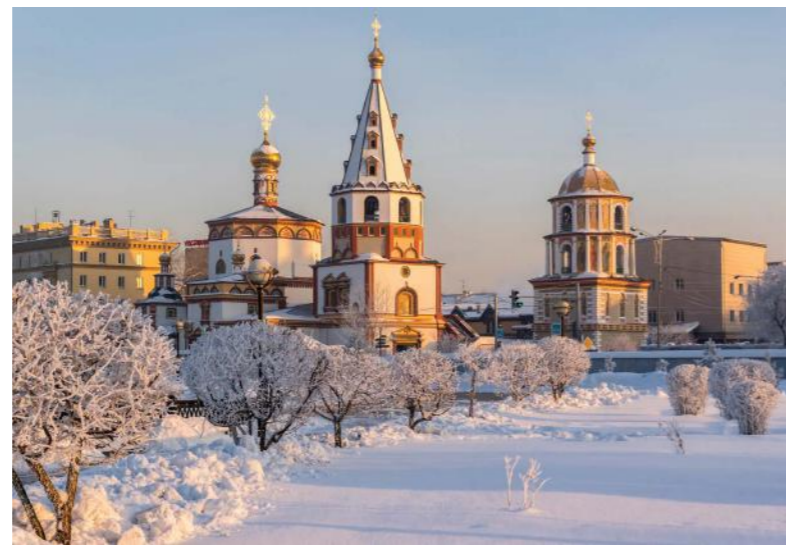
In 1960, US president Dwight D. Eisenhower planned what would have been a landmark visit to the Soviet Union, scheduling a stop at Irkutsk and Lake Baikal en route to Moscow. Trouble is, there was no respectable road linking city and lake. One quick bark from the Kremlin, however, and, just two months later, the missile-like trajectory of a brand new road terminated at a spanking, plush hotel atop a lakeside hill -pillows plumped and ready.

Unfortunately, this small, optimistic puddle of détente was to freeze solid shortly thereafter, when the American Lockheed U-2 high-altitude reconnaissance aircraft piloted by Gary Powers was shot down over Soviet airspace in May that year.

Still, Listvyanka undoubtedly benefited despite this illustrious no-show, and is now Lake Baikal's most popular tourist destination, its ice-cold waters supposed to bring longer life, whilst having a markedly opposite effect on the more tender extremities.

Irkutsk itself was founded in 1661 by those notorious mercenaries and break-dancing pioneers, the Cossacks, as a settlement for trading gold and furs. What really put it on the map, though, was the upshot of the Decembrist revolt against Tsar Nicholas I in the early 19th century, when innumerable Russian artists, officers and nobles were exiled to Siberia for their part in proceedings.





Irkutsk became the major centre of intellectual and social life for these chilly exiles, and they are responsible for much of the city's cultural heritage; a handful of their wooden houses, adorned with ornate, hand-carved decorations, survive to this day. By the end of the 19th century, exiles accounted for some 30% of the city's population, and its wide streets and ornate continental architecture earned Irkutsk the sobriquet 'Paris of Siberia'.

Today, with only the smallest extant enclaves of said lavish heritage hemmed in by grim, standard-issue Soviet apartment blocks, similarities with Paris prove somewhat trickier to unearth. And the city is probably better known as the home of Irkut, which manufactures the superlative, Sukhoi Su-30 family of jet fighters, and as a major stopping point on the Trans-Siberian railway.

Linking the 5,772 miles from Moscow to Vladivostok since 1916, the Trans-Siberian is the longest railway line in the world. Construction began in 1891, and the first train reached Irkutsk in 1898. With similar progress made on the line westwards from Vladivostok, the committee members in charge then found themselves with two railheads separated by an impossibly deep, 400-mile-long obstruction.

Their solution, until the Circum-Baikal railway was built, was a 'swimming bridge' -an icebreaker to serve as a shuttle ferry for railway carriages. The Russian admiral and explorer Stepan Makarov duly designed an ice-breaking train ferry, the Baikal, but it was actually built by Sir V.G. Armstrong and Co in Newcastle-upon-Tyne for the sum of £79,890.

As the Baikal was being built, every component was numbered and colour coded with black and white paint, and the entire vessel was then disassembled and transported in kit form, by rail, 6,000 miles to Listvyanka, where a shipyard was created to reassemble it. The boilers, engines and some other components were built in Saint Petersburg and also rail-freighted to the yard, where a workforce consisting largely of exiles and criminals spent three years bolting the steamer back together again.

Launched in 1899 and boasting 15 boilers and four funnels, the 210ft long, 56ft wide finished article could carry 24 railway coaches and one locomotive on the middle deck. Equally importantly, encased in an inch of steel, it could power its way across 40 miles of lake frozen to a depth of one and half metres.

Whilst bits of the Baikal were making their way across Russia, a second, smaller icebreaker, the Angara -designed to transport goods and passengers over the same route- was commissioned, duly built, shipped and rebuilt in the same painstaking way, and launched in 1900.

Interestingly, an ice breaker's hull isn't designed for sharp-prowed ramming in the manner of a Greek trireme, but is shaped to ride up onto the ice and crack it using the weight of the vessel. This not only makes for ponderous progress, but also suggests the crossing of 40 miles of lake in just four hours to be something of an achievement.

When the ice became too thick for the ships to break through, the use of horse- and husky-drawn sleds became the only way of transferring shivering passengers across the lake. Narrow gauge rail tracks were actually laid across the ice during the 1904-1905 Russo-Japanese War, but the presence of a locomotive deep beneath the surface to this day pays testament to the foolhardiness of such a perilous enterprise.

Completion of the Circum-Baikal Railway in 1904 bypassed the ferries, but from time to time derailments or rockfalls incapacitated the railway, so both ships were held in reserve until 1916. Baikal was burnt out and destroyed in the Russian Civil War but Angara survives. It has been restored and is permanently moored at Irkutsk where, with a penchant for sinking on a regular basis, it serves as an office, museum and home to the curator.

From Listvyanka, our 24 mile drive across a frozen Lake Baikal to Tankhoy will be a unique experience; with the exception of a route that hugs the western shoreline north from Listvyanka to the island of Olkhom, driving on the ice is usually illegal...





Ulan-Ude is the first city those travelling east on the Trans-Siberian railway come to which feels genuinely Asian. The indigenous people, the Buryats, are naturally calm and easy-going and, despite the best efforts of the Soviets in the 1930s, the city still boasts the largest Buddhist population in Russia. Even the arrival of the Cossacks in 1666 was peacefully accepted, though this may have a deal to do with the quantity of vodka they brought with them.

Today, evidence of Soviet authoritarianism, though nothing like as predominant as in other Russian cities, is still writ particularly large in the form of Lenin's head. If the size of the head corresponds to the iron-fisted proclivities of the owner, then Vladimir Lenin must have been someone to whom the sensible absolutely never said 'No'.

His colossal bronze head towers some 7.7 metres over the city's main square, and weighs 42 tons. A special coating ensures that the bronze doesn't suffer the traditional patina of age, but even the Soviets could do nothing about the weather; locally the sculpture is known as 'the world's biggest Jewish head' because snow sticks to the top, awarding it the world's largest yarmulke.

ARCTIC FOX *Vulpes Lagopus*

So well insulated is the Arctic fox that it doesn't even start to shiver until the temperature drops to -70°C. It boasts the animal kingdom's best insulating fur, footpads covered in fur, and increased blood circulation to the paws to stop them freezing to the ice. Making Michael Jackson's efforts look somewhat amateurish, the Arctic fox morphs from brown to snow white every winter. It hears its favourite snack, lemmings, burrowing under 4-5" of snow, pouncing and punching through the surface to catch its victim.



GREY WOLF *Canis Lupus*

The most common predator in Russia, the grey wolf is a social animal living in packs of blood relatives 10-15 strong. Once upon a time, tying people to trees and leaving them to be devoured by wolves constituted a particularly unpleasant form of execution in this neck of the woods. But, the odd little girl in a red hooded cape aside, wolves do not, in fact, attack people very often. If in danger, climb the nearest tree and wait until the pack gets bored. You may be up there a while...



SIBERIAN FLYING SQUIRREL *Pteromys Volans*

This diminutive Old World flying squirrel sports a furry membrane known as a patagium -a flap of skin which stretches between its front and rear legs. Spreading this membrane not only gives the squirrel the look of freshly-steam-rollered road kill, but also allows it to glide from tree to tree across distances of up to 100 metres. Its glide ratio of up to 3.31 may not be a patch on a hang-glider's 15, but it's enough to guarantee the squirrel need never touch the ground in a lifetime.



WOLVERINE *Gulo Gulo*

Not to be confused with Hugh Jackman, the Siberian wolverine also goes by the name of Glutton, after the Latin gulo, and Skunk Bear in honour of its appalling pong. A better scavenger than predator, it will follow the trails of wolves, lynx and other predators in the hope of finding abandoned prey, but its sheer ferocity also allows it to hunt animals larger than itself. The wolverine has developed teeth purpose made for ripping into flesh that has been frozen solid.



BROWN BEAR *Ursus Arctos*

The bear has served as a widespread symbol of Russia, then the Soviet Union, then Russia since the 16th century, so it'll come as no surprise to learn that there are some 13,000 of them patrolling the Irkutsk region of Siberia.

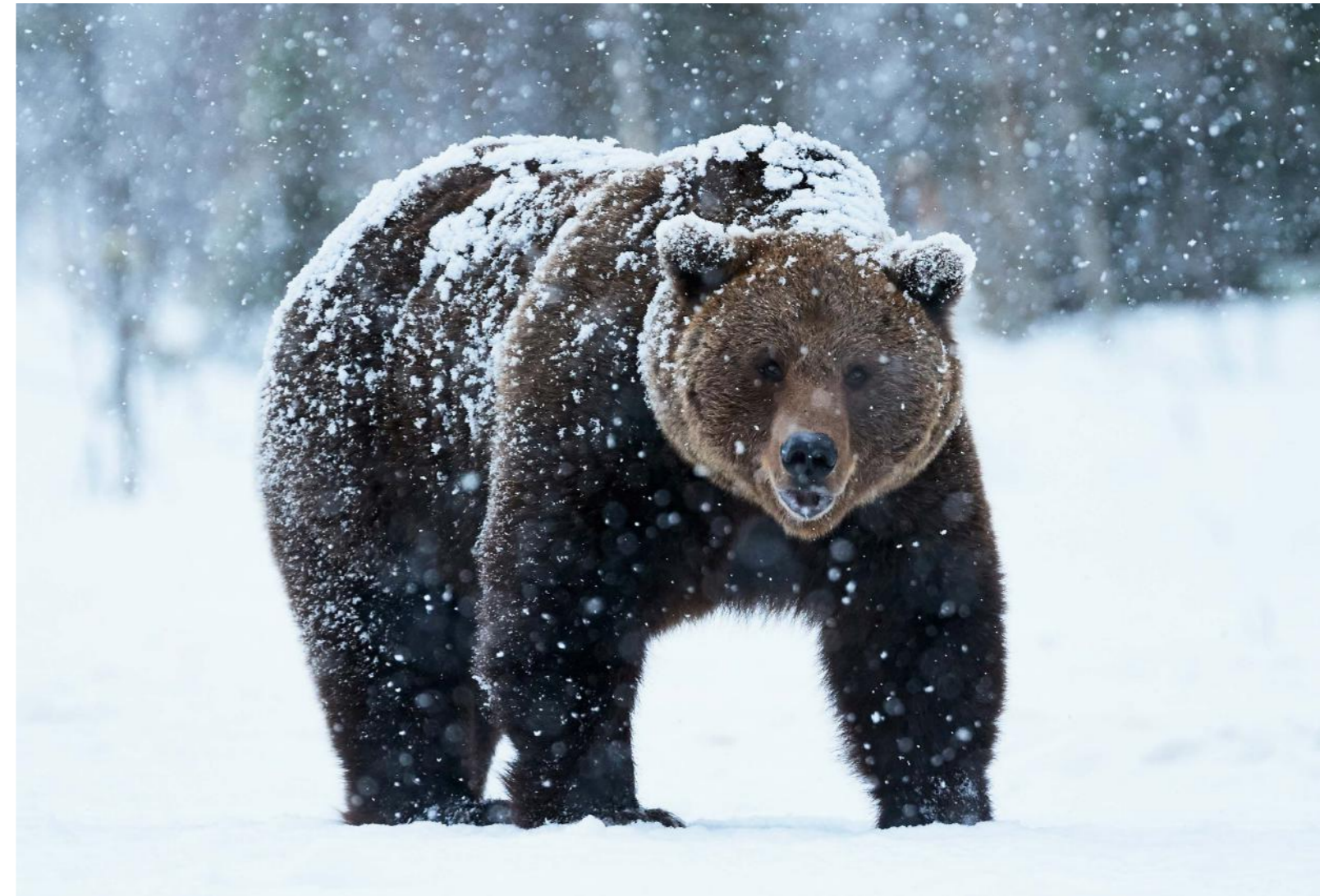
The five mountain ranges surrounding Lake Baikal are a particularly favoured habitat of the brown bear. And, despite that fact that uncontrolled hunting has halved their numbers in the last 40 years or so, they're still pretty thick on the ground, with a density of about one per 300 acres -think seven bears living on the Blenheim Palace estate.

You are, however, unlikely to come across one because bears tend to go to bed in late October and don't get up again until April. Like anyone taking to their bed for almost half the year, a bear is fairly particular about its mattress; the main requirement for a den being dry earth under large flat rocks or beneath the roots of mature trees.

A bear woken during the winter will be low on porridge and exceptionally miffed about life in general. Indeed, of the 70 odd listed cases of attacks by bears in the region, 60 of them took place in winter; in 17 of these, the man died, and in five, was almost entirely eaten. In 60% of all these attacks, bears actively pursued or even ambushed their human victims.

Weighing in at up to half a tonne, standing 5ft tall at the shoulder and towering up to 9ft when reared on hind legs to better assess your potential as lunch, possessed of scimitar-curved claws up to 4" long, capable of 30mph at full lollipop and alarmingly agile, an insomniac bear is spectacularly dangerous.

The region's wildlife watchdog agency offers the following, um, helpful advice should you find yourself face-to-face with a bear. 'Do not run away from the animal. Climb up on a tree stump (you may have to quickly fell a large tree at this point) to show it your superiority, and make a noise (involuntarily one presumes) to scare it until it goes away.' So good luck with all that.





MUSH

Eastern Siberia plays host to the coldest inhabited places on Earth, where winter temperatures of between -45 and -50 degrees Celsius are commonplace. At -32 degrees the hairs in your nose freeze and stick together (you can try this humorous handicap to breathing at home; just cram each nostril full of deep-frozen tinsel).

Now, the blame for mankind's ability to survive, let alone thrive in, such a hostile environment must be laid squarely at the door of the Siberian husky. The 'short-faced wolf' was originally bred by natives of the Chukchi Peninsula in the Siberian Arctic, whose hunter-gatherer culture relied on them at almost every level. Indeed, the phrase 'three dog night' stems from their practice of keeping Huskies in bed with them for warmth.

With a double coat, extra eyelids to keep the eyes moist and protected, a nose that dries at night to avoid freezing and the ability to regulate its metabolism so that it never becomes completely exhausted, a husky can withstand temperatures as low as -60 degrees Celsius.

A sled team comprises up to 12 dogs attached, by a veritable cat's cradle of rope through which they are endlessly chewing, to a wooden sled lashed together with strips of hide, rather than screws, to allow flexing over rough terrain.

Huskies, often disconcertingly sporting one blue and one brown eye -a condition known as heterochromia, are running fools. At a mere -10 to -20 degrees -the norm for early March here, they'll run flat out for 6 hours a day, at up to nearly 30mph. The only way to stop a team is to literally throw an anchor off the back of the sled. And, even exhausted, they'll be howling to be on the move again almost immediately.

However, those lured by the patter of paws, the burp of snow beneath runners and the gentle creak of sled timber bindings should beware... Huskies consume 8000 calories per day -four times the intake of a man.

And, blended and tossed aloft by those tireless paws, the decidedly unwholesome side effect of said appetite all too literally strikes sled passengers on a regular basis, leaving them inclined to vote the noisy blue fug of two-stroke Ski-Doo exhaust emissions fractionally more acceptable than the husky equivalent.

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SPECIFICATIONS

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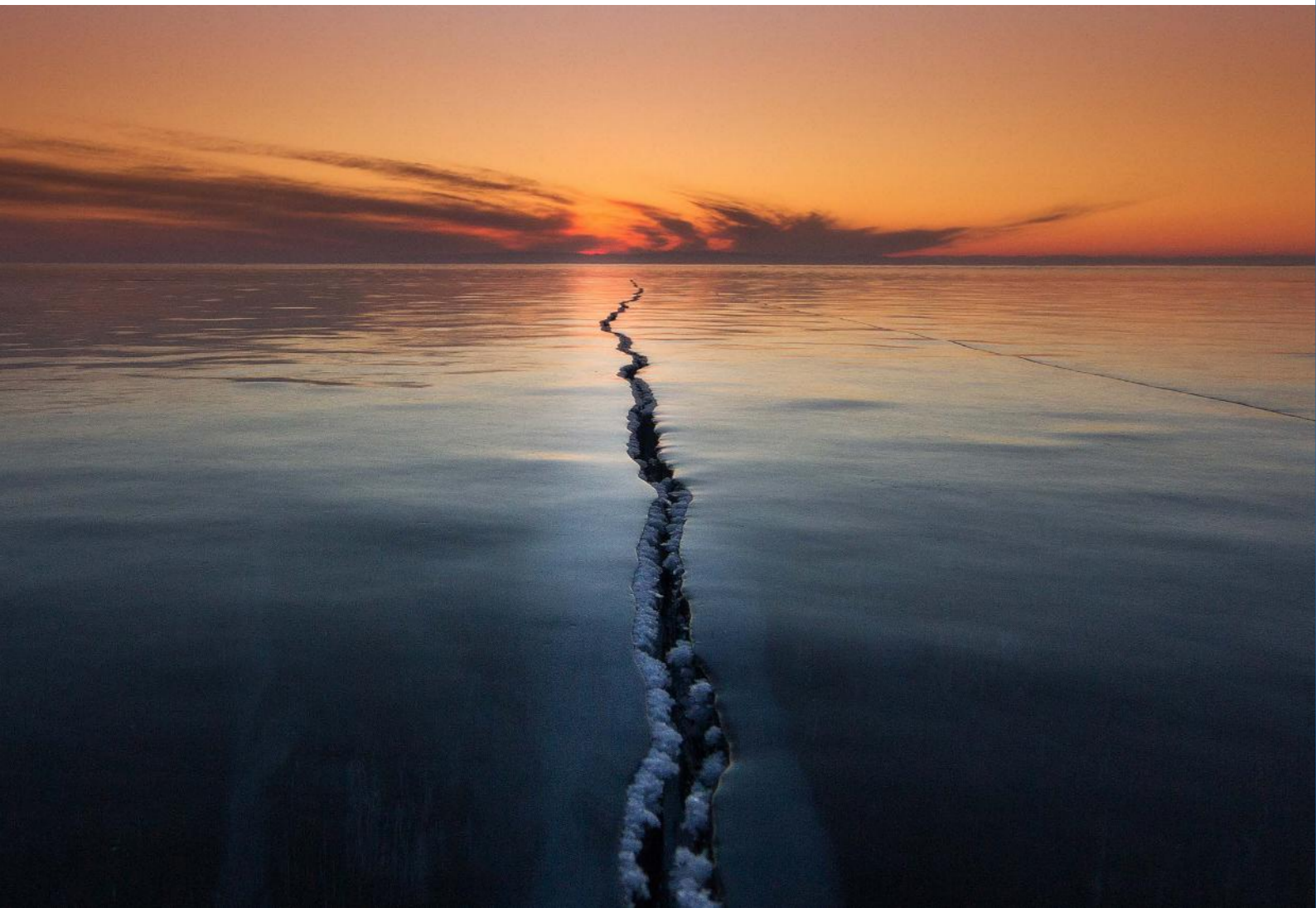
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